



# **Environmental Impact Analysis Process**

## **Final Environmental Assessment (EA) for the Revitalization of Military Family Housing**

United States Air Force  
Air Education and Training Command  
Keesler Air Force Base, Mississippi

March 2006

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## 14. ABSTRACT

This EA addresses the potential environmental consequences to the human and natural environment from the Proposed Action, Alternative 1, Alternative 2, and the No Action Alternative associated with the demolition, construction, and potential privatization of MFH at Keesler AFB, MS. The Proposed Action is for the Air Force, through the Operations and Maintenance (O&M) and military construction (MILCON) processes, to demolish 1,588 houses, construct 1,067 houses, and then potentially privatize all housing units (1,067 end-state units) and associated infrastructure and utilities by conveying them to a private real estate development and property management company. The developer may then construct several improvements such as recreational and storage areas. Project duration would be as few as five years; the first two to three years would involve O&M and MILCON demolition and construction of housing units, the next three to 10 years potential construction of improvements by a private developer. Alternative 1 is similar in all respects to the Proposed Action, except the Air Force would proceed with O&M demolition of 710 units and then convey the remaining 878 units and associated infrastructure to the developer. The developer would then demolish the remaining units and construct new housing and improvements; both housing unit and improvement construction would occur over a four- to 10-year period. Alternative 2, a maximum development scenario, is similar to Alternative 1 except the developer would construct 1,225 new units. Under all alternatives, if privatized, the land supporting the final housing units would be leased to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. Under the No Action Alternative, the Air Force would continue with the previously approved O&M project and demolish 710 units, would likely renovate the remaining 878 units, and would construct 185 units. The Air Force would not privatize Keesler AFB MFH. All demolition and construction activities would occur on Keesler AFB property. Resources and issues addressed in the EA include earth resources, water resources (including floodplains), biological resources, air quality, land use, noise, hazardous materials and wastes, solid waste, infrastructure, socioeconomics and environmental justice, cultural resources, and safety and protection of children.

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**FINDING OF NO SIGNIFICANT IMPACT  
FOR  
REVITALIZATION OF MILITARY FAMILY HOUSING  
KEESLER AIR FORCE BASE, MISSISSIPPI**

**AGENCY:** United States Air Force, Air Education and Training Command.

**PURPOSE:** The United States Air Force (USAF) prepared an Environmental Assessment (EA) of the potential environmental consequences of revitalizing Military Family Housing (MFH) at Keesler Air Force Base (AFB), MS. The EA was completed pursuant to the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Sections 1500-1508), Department of Defense (DoD) Directive 6050.1, and 32 CFR 989.

**PROPOSED ACTION:** The Proposed Action is for the Air Force, through the Operations and Maintenance (O&M) and military construction (MILCON) processes, to demolish 1,588 houses, construct 1,067 houses, and then potentially privatize all housing units (1,067 end-state units) and associated infrastructure and utilities by conveying them to a private real estate development and property management company. The developer may then construct several improvements such as recreational and storage areas. Project duration would be as few as 5 years; the first 2-3 years would involve O&M and MILCON demolition and construction of housing units, the next 3 to 10 years potential construction of improvements by a private developer. All construction and demolition (C&D) activities would occur on Keesler AFB property.

**ALTERNATIVE 1:** Alternative 1 is similar in all respects to the Proposed Action, except the Air Force would proceed with O&M demolition of 710 units and then convey the remaining 878 units and associated infrastructure to the developer. The developer would then demolish the remaining units and construct new housing and improvements; both housing unit and improvement construction would occur over a 4 to 10-year period.

**ALTERNATIVE 2:** Alternative 2 is similar to Alternative 1, with the exception of the number of units to be demolished and constructed. Under Alternative 1, the developer would demolish all 1,588 units and construct 1,225 new units as well as several improvements such as recreational and storage areas. At completion of the project, there would be 1,225 housing units at Keesler AFB. All C&D activities would occur on Keesler AFB property.

**NO ACTION ALTERNATIVE:** Under the No Action Alternative, the Air Force would continue with the previously approved O&M project and demolish 710 units, would likely renovate the remaining 878 units, and construct 185 units. The Air Force would not privatize Keesler AFB MFH. All demolition and construction activities would occur on Keesler AFB property.

## **SUMMARY OF FINDINGS FOR THE PROPOSED ACTION:**

***Earth Resources.*** Construction and demolition activities would temporarily disturb soils. Based on analysis presented in Section 4.1 of the EA impacts to earth resources would not be significant.

***Water Resources.*** No activities would occur within wetlands. Although demolition activities would occur within the 100-year floodplain, there would be no new construction. Since only damaged structures would be demolished in the floodplain and the functionality or utility of the floodplain would not be affected, a Finding of No Practicable Alternative in accordance with Executive Order 11988 (Floodplain Management) is not required. A stormwater pollution prevention plan and construction permits are required by the USEPA and the MDEQ. Based on analysis presented in Section 4.2 of the EA, no significant impacts to water resources are anticipated.

***Biological Resources.*** The proposal is not expected to have an impact on threatened or endangered flora or fauna. Impacts to wildlife and vegetation are expected to be minimal. Proposed removal of Heritage Trees must be coordinated with 81 CES/CEV. Based on analysis presented in Section 4.3 of the EA no significant impacts to biological resources are anticipated.

***Air Quality.*** Construction and demolition activities would result in short-term increases in combustion and dust-related emissions. However, based on analysis presented in Section 4.4 of the EA impacts to air quality would not be significant.

***Land Use.*** None of the proposed activities would cause a change in the governing land use plan. There would be beneficial impacts associated with removal of housing at Oak Park from the Clear Zone associated with the airfield. Consequently, based on analysis presented in Section 4.5 of the EA no significant impacts are anticipated.

***Noise.*** Minor short-term noise associated with C&D activities would occur. The installation is dominated by aircraft noise and the amount of noise created by C&D activities is minimal in comparison. Based on analysis presented in Section 4.6 of the EA the Proposed Action would not significantly contribute to the existing noise environment of Keesler AFB.

***Hazardous Materials and Waste.*** Construction and demolition activities would not involve the use of any hazardous materials, with the exception of fuel. Asbestos and lead-based paint waste would be handled and disposed of in accordance with Air Force guidance and plan requirements. Removal of these substances would result in a beneficial impact to residents. Based on analysis presented in Section 4.7 of the EA no impacts are anticipated.

***Solid Waste.*** Based on local landfill capacity and current use rates, C&D debris should be recycled or reused to the extent practicable and the remaining debris distributed among the five local landfills to avoid placing a significant burden on the capacity of a single landfill. Consequently, there would be a negligible impact on local landfills.

***Infrastructure.*** Minor short-term disruptions in utility services associated with construction may occur; however, these would be localized and of short duration. Based on analysis presented in Section 4.9 of the EA no significant long-term impacts to transportation or utility system components are anticipated as a result of this proposal.

***Socioeconomics.*** There would be no substantial population changes within the region surrounding the project location. There would be a minor benefit to the local economy associated with the employment or influx of workers, potential job creation, and monetary expenditures associated with infrastructure changes as a result of implementing the proposal. Any additional demands the proposed action may place on the availability of labor resources would not cause an adverse socio-economic effect on minority or low-income populations as all socio-economic levels will be impacted in the same manner.

***Cultural Resources.*** Correspondence with the Mississippi State Historic Preservation Officer confirms that no properties listed in or eligible for listing in the National Register of Historic Places would be affected by the proposed project. Consequently, no impacts to cultural resources would occur.

***Safety/Protection of Children.*** All activities and workers at construction sites would be required to implement Occupational Safety and Health Administration standards. The Air Force and /or developer would be required to include project design and safety precautions to protect children in the residential areas surrounding the work sites. Based on analysis presented in Section 4.12 of the EA no significant impacts are anticipated.

## **SUMMARY OF FINDINGS FOR ALTERNATIVE 1:**

Alternative 1 is similar in all respects to the Proposed Action, with the exception that the demolition and construction of housing units may occur over a longer period of time. As a result, impacts would be the same as those described under the Proposed Action. Therefore, based on analysis presented in the EA, no significant impacts are anticipated from implementation of Alternative 1.

## **SUMMARY OF FINDINGS FOR ALTERNATIVE 2:**

Alternative 1 is similar in all respects to Alternative 2, with the exception that the developer would construct an additional 158 housing units. Based on analysis presented in the EA, construction of an additional 158 units would not result in impacts significantly different from those described under the Proposed Action. Consequently, no significant impacts are anticipated from implementation of Alternative 1.

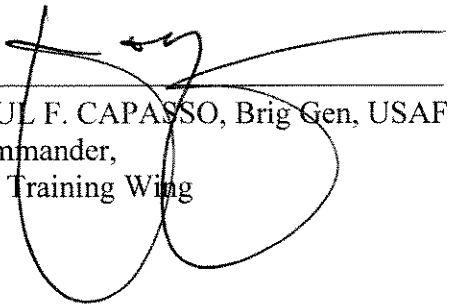
## **SUMMARY OF FINDINGS FOR THE NO ACTION ALTERNATIVE:**

Construction and demolition activities under the No Action Alternative would be much less than that of the Proposed Action. Therefore, impacts associated with these activities would be much less than those described under the Proposed Action. Based on analysis presented in the EA, no significant impacts are anticipated from implementation of the No Action Alternative.

**ENVIRONMENTAL JUSTICE:** Activities associated with the Proposed Action, Alternative 1, Alternative 2, and No Action Alternative would not impose adverse environmental effects on adjacent populations. Therefore, no disproportionately high and adverse effects will occur to minority or low-income populations.

**PUBLIC/REGULATORY AGENCY INVOLVEMENT:** On 25 February 2006, the Air Force made the Draft EA and Draft FONSI available to the public at the West Biloxi Library, and sent the documents to the Mississippi (MS) Department of Environmental Quality, MS State Historic Preservation Officer, U.S. Fish and Wildlife Service, MS Department of Marine Resources, U.S. Army Corps of Engineers, MS State Clearinghouse, and City of Biloxi Community Development Department. The review period lasted 14 days. No comments associated with the project were received from the public. None of the aforementioned regulatory agencies identified any concerns associated with the Proposed Action or alternatives.

**FINDING OF NO SIGNIFICANT IMPACT:** Based on my review of the facts and analysis in the EA which is attached and incorporated by reference, I conclude that the Proposed Action or Alternatives will not have a significant impact either by themselves or considering cumulative impacts. Accordingly, the requirements of NEPA, the CEQ Regulations, and 32 CFR 989 have been fulfilled, and an environmental impact statement is not required and will not be prepared.



PAUL F. CAPASSO, Brig Gen, USAF,  
Commander,  
81<sup>st</sup> Training Wing

16 Feb 06  
Date

# **REVITALIZATION OF MILITARY FAMILY HOUSING KEESLER AFB, MS**

## **FINAL ENVIRONMENTAL ASSESSMENT**

### **Submitted to:**

UNITED STATES AIR FORCE  
AIR EDUCATION AND TRAINING COMMAND  
Keesler Air Force Base, Mississippi

### **Reference:**

Contract No. F41624-01-D-9007  
Task Order No. 2000

**MARCH 2006**



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**COVER SHEET**  
**FINAL ENVIRONMENTAL ASSESSMENT**  
**REVITALIZATION OF MILITARY FAMILY HOUSING**  
**KEESLER AFB, MS**

- a. *Responsible Agency:* Department of the Air Force, 81<sup>st</sup> Training Wing, Keesler Air Force Base (AFB), Mississippi (MS)
- b. *Cooperating Agencies:* None
- c. *Proposals and Actions:* This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the proposed REVITALIZATION OF MILITARY FAMILY HOUSING (MFH) AT KEESLER AIR FORCE BASE, MS. Keesler Air Force Base is located in Harrison County, MS, within the city of Biloxi, MS. After considering the potential environmental consequences analyzed for the Proposed Action, Alternative 1, Alternative 2, and the No Action Alternative, the U.S. Air Force will decide whether to implement the Proposed Action, Alternative 1, Alternative 2, or the No Action Alternative.
- d. *Comments and Inquiries:* Comments or inquiries regarding this document should be directed to Mr. George Daniel, 81 CES/CEVN, 508 L. Street, Keesler AFB MS, 39534-2115 (228-377-5823)
- e. *Designation:* Final Environmental Assessment
- f. *Abstract:* This EA addresses the potential environmental consequences to the human and natural environment from the Proposed Action, Alternative 1, Alternative 2, and the No Action Alternative associated with the demolition, construction, and potential privatization of MFH at Keesler AFB, MS. The Proposed Action is for the Air Force, through the Operations and Maintenance (O&M) and military construction (MILCON) processes, to demolish 1,588 houses, construct 1,067 houses, and then potentially privatize all housing units (1,067 end-state units) and associated infrastructure and utilities by conveying them to a private real estate development and property management company. The developer may then construct several improvements such as recreational and storage areas. Project duration would be as few as five years; the first two to three years would involve O&M and MILCON demolition and construction of housing units, the next three to 10 years potential construction of improvements by a private developer. Alternative 1 is similar in all respects to the Proposed Action, except the Air Force would proceed with O&M demolition of 710 units and then convey the remaining 878 units and associated infrastructure to the developer. The developer would then demolish the remaining units and construct new housing and improvements; both housing unit and improvement construction would occur over a four- to 10-year period. Alternative 2, a maximum development scenario, is similar to Alternative 1 except the developer would construct 1,225 new units. Under all alternatives, if privatized, the land supporting the final housing units would be leased to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. Under the No Action Alternative, the Air Force would continue with the previously approved O&M project and demolish 710 units, would likely renovate the remaining 878 units, and would construct 185 units. The Air Force would not privatize Keesler AFB MFH. All demolition and construction activities would occur on Keesler AFB property. Resources and issues addressed in the EA include earth resources, water resources (including floodplains), biological resources, air quality, land use, noise, hazardous materials and wastes, solid waste, infrastructure, socioeconomics and environmental justice, cultural resources, and safety and protection of children.

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## LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

<b>§</b>	Section
<b>µg/m<sup>3</sup></b>	Micrograms per Cubic Meter
<b>53 WRS</b>	53 <sup>rd</sup> Weather Reconnaissance Squadron
<b>85 EIS</b>	85 <sup>th</sup> Engineering Installation Squadron
<b>81 CES/CEV</b>	81 <sup>st</sup> Civil Engineering Squadron/Environmental Flight
<b>81 CES/CEVN</b>	81 <sup>st</sup> Civil Engineering Squadron/Natural Resources Program Office
<b>81 CES/CEVH</b>	81 <sup>st</sup> Civil Engineering Squadron/Historic Preservation Program Office
<b>815 AS</b>	815 <sup>th</sup> Airlift Squadron
<b>ACAM</b>	U.S. Air Force Air Conformity Applicability Model
<b>ACBM</b>	Asbestos Containing Building Materials
<b>ACHP</b>	Advisory Council on Historic Preservation
<b>AETC</b>	Air Education and Training Command
<b>AFB</b>	Air Force Base
<b>AFI</b>	Air Force Instruction
<b>AFOSH</b>	Air Force Occupational Safety and Health
<b>AFPD</b>	Air Force Policy Directive
<b>AFRC</b>	Air Force Reserve Command
<b>AICUZ</b>	Air Installation Compatible Use Zones
<b>AOC</b>	Areas of Concern
<b>APZ</b>	Accident Potential Zone
<b>AST</b>	Aboveground Storage Tanks
<b>BMP</b>	Best Management Practices
<b>BTEX</b>	Benzene, Toluene, Ethylbenzene, and Xylenes
<b>C&amp;D</b>	Construction and Demolition
<b>CAA</b>	Clean Air Act
<b>CEQ</b>	Council on Environmental Quality
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CFR</b>	Code of Federal Regulations
<b>CO</b>	Carbon Monoxide
<b>CWA</b>	Clean Water Act
<b>CY</b>	Calendar Year
<b>dB</b>	Decibels
<b>dBA</b>	A-Weighted Decibels
<b>DoD</b>	Department of Defense
<b>DOPAA</b>	Description of Proposed Action and Alternatives
<b>DRMO</b>	Defense Reutilization and Marketing Office
<b>EA</b>	Environmental Assessment
<b>EIAP</b>	Environmental Impact Analysis Process
<b>EIS</b>	Environmental Impact Statement
<b>EO</b>	Executive Order
<b>EPCRA</b>	Emergency Planning and Community Right-to-Know Act
<b>ERP</b>	Environmental Restoration Program
<b>ETS/CEM</b>	Emission Tracking System/Continuous Emissions Monitoring Date
<b>FEMA</b>	Federal Emergency Management Agency
<b>FHWA</b>	Federal Highway Administration

## ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

<b>FONSI</b>	Finding of No Significant Impact
<b>ft<sup>2</sup></b>	Square Foot
<b>FY</b>	Fiscal Year
<b>HAPs</b>	Hazardous Air Pollutants
<b>HAZMAT</b>	Hazardous Materials
<b>HHRA</b>	Human-Health Risk Assessment
<b>HHW</b>	Household Hazardous Waste
<b>HRMA</b>	Housing Requirements Market Analysis
<b>IA/RS</b>	Initial Assessment/Records Search
<b>IICEP</b>	Interagency and Intergovernmental Coordination for Environmental Planning
<b>INRMP</b>	Integrated Natural Resources Management Plan
<b>IRP</b>	Installation Restoration Program
<b>JLUS</b>	Joint Land Use Study
<b>LAER</b>	Lowest Achievable Emissions Rate
<b>lb</b>	Pounds
<b>LBP</b>	Lead-Based Paint
<b>L<sub>dn</sub></b>	Day-Night Average Noise Levels
<b>LOS</b>	Level of Service
<b>LUC</b>	Land Use Controls
<b>MDEQ</b>	Mississippi Department of Environmental Quality
<b>MDES</b>	Mississippi Department of Employment Security
<b>MDOT</b>	Mississippi State Highway Department
<b>MFH</b>	Military Family Housing
<b>MILCON</b>	Military Construction
<b>MS</b>	Mississippi
<b>MSA</b>	Metropolitan Statistical Area
<b>MSL</b>	Mean Sea Level
<b>N/A</b>	Not Applicable
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NCSHPO</b>	National Conference of State Historic Preservation Officers
<b>NEI</b>	National Emissions Inventory
<b>NEPA</b>	National Environmental Policy Act
<b>NFRAP</b>	No Further Response Action Planned
<b>NHPA</b>	National Historic Preservation Act
<b>NO<sub>2</sub></b>	Nitrogen Dioxide
<b>NO<sub>x</sub></b>	Nitrogen Oxides
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>O<sub>3</sub></b>	Ozone
<b>O&amp;M</b>	Operations & Maintenance
<b>OSD</b>	Office of the Secretary of Defense
<b>OSHA</b>	Occupational Safety and Health Administration
<b>Pb</b>	Lead
<b>PCB</b>	Polychlorinated Biphenyls
<b>PM<sub>10</sub></b>	Particulate Matter with a Diameter Less Than or Equal to 10 Microns

## ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

<b>PM<sub>2.5</sub></b>	Particulate Matter with a Diameter Less Than or Equal to 2.5 Microns
<b>POL</b>	Petroleum, Oil, and Lubricant
<b>ppm</b>	Parts per Million
<b>PSD</b>	Prevention of Significant Deterioration
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RFP</b>	Request for Proposal
<b>ROD</b>	Record of Decision
<b>ROI</b>	Region of Influence
<b>SARA</b>	Superfund Amendments and Reauthorization Act
<b>SER</b>	Significant Emissions Rate
<b>SFHA</b>	Special Flood Hazard Areas
<b>SHPO</b>	State Historic Preservation Officer
<b>SIP</b>	State Implementation Plan
<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>SV/FMO</b>	Services/Furniture Management Office
<b>SWPPP</b>	Stormwater Pollution Prevention Plan
<b>TEL</b>	Tetraethyl Lead
<b>TPH</b>	Total Petroleum Hydrocarbons
<b>TRW</b>	Training Wing
<b>TSCA</b>	Toxic Substances Control Act
<b>TSP</b>	Total Suspended Particulate
<b>U.S.</b>	United States
<b>USACE</b>	U.S. Army Corps of Engineers
<b>USAF</b>	U.S. Air Force
<b>USC</b>	United States Code
<b>USEPA</b>	U.S. Environmental Protection Agency
<b>USFWS</b>	U.S. Fish and Wildlife Service
<b>UST</b>	Underground Storage Tanks
<b>VMT</b>	Vehicle Mile Traveled
<b>VOC</b>	Volatile Organic Compounds
<b>XRF</b>	X-ray Fluorescence

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## 1. PURPOSE AND NEED

### 1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The United States Air Force (USAF), Air Education and Training Command (AETC), proposes to demolish hurricane damaged homes, construct new homes, and then potentially privatize its Military Family Housing (MFH) at Keesler Air Force Base (AFB), Mississippi. The purpose of the Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families will choose to live. In evaluating its current stock of housing units to accommodate this need, the Department of Defense (DoD) has determined that the current condition of DoD-owned housing is poor; about 60 percent of DoD units need to be renovated or replaced (Office of the Secretary of Defense [OSD], 2004). At Keesler AFB, nearly 65 percent of the base's 1,588 housing units were more than 35 years old and did not meet current Air Force housing standards (U.S. Air Force, 2004). As a result of Katrina, nearly all of the housing units were severely damaged or destroyed. Upon further evaluation, the Air Force has determined that all of the housing units need to be replaced due to economic factors.

To attempt to meet the overall DoD need for safe, quality, well-maintained military family housing, the *National Defense Authorization Act of 1996* gave the DoD the authority to engage private sector businesses through a process of housing privatization, wherein the DoD would rely on private sector housing developers to renovate or demolish existing housing units, build new units, and provide the infrastructure needed to support such developments. However, due to Hurricane Katrina, the urgency of providing housing requires the use of military construction (MILCON) funds for initial construction prior to privatization.

Determining the specific need for required housing at Keesler AFB involved estimating the number of appropriate private sector housing units available to military families within 20 miles, or a 60-minute commute. In 2004, a Housing Requirements Market Analysis (HRMA) was conducted for Keesler AFB to identify the housing units available to military members in the private community. The shortfalls in the available private sector housing were factored into the total MFH requirement for Keesler AFB to determine the number of units that the Air Force needs to provide at Keesler for its personnel—1,067 units.

If privatized, the developer would own the units, lease the land from the Air Force, and collect rent from service members while providing maintenance and management. Additional information and details regarding the housing privatization initiative can be found on the DoD housing privatization website at <http://www.acq.osd.mil/housing>.

## 1.2 LOCATION OF THE PROPOSED ACTION

Keesler AFB is a USAF training installation under the AETC. The installation covers 1,668 acres and is located in Harrison County, MS within the city of Biloxi. Figure 1-1 shows the location of Keesler AFB. Under the Proposed Action, activities would occur within existing Keesler AFB MFH areas, as shown in Figure 1-2. These housing areas comprise a total of about 419 acres (U.S. Air Force, 2004a).

## 1.3 DECISION TO BE MADE

The Air Force decision to be made following completion of this Environmental Assessment (EA) is whether to proceed with military family housing revitalization through the implementation of the Proposed Action or alternatives, or to take No Action.

## 1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This EA identifies, describes, and evaluates the potential environmental impacts that may result from the implementation of MFH housing privatization under the Proposed Action and the alternative actions, as well as the No Action Alternative. As appropriate, the affected environment and environmental consequences of the Proposed Action and alternatives may be described in terms of site-specific descriptions or regional overview. Finally, the EA identifies measures that would prevent or minimize environmental impacts.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on 11 February 1994. In the EO, the President instructed each federal agency to make “achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” The Federal Interagency Working Group on Environmental Justice defines *adverse* as “having deleterious effects on human health or the environment that is significant, unacceptable, or above generally accepted norms.”

Based on analysis of impacts in the EA, a determination on the significance of impacts will be made in a decision document. If anticipated impacts would be significant, the Air Force would either prepare an Environmental Impact Statement (EIS) or would not implement the proposal. If impacts would not be significant, a Finding of No Significant Impact (FONSI) would be prepared. Accordingly, Environmental Justice will be addressed either in a FONSI or in a Record of Decision (ROD) based on an EIS.

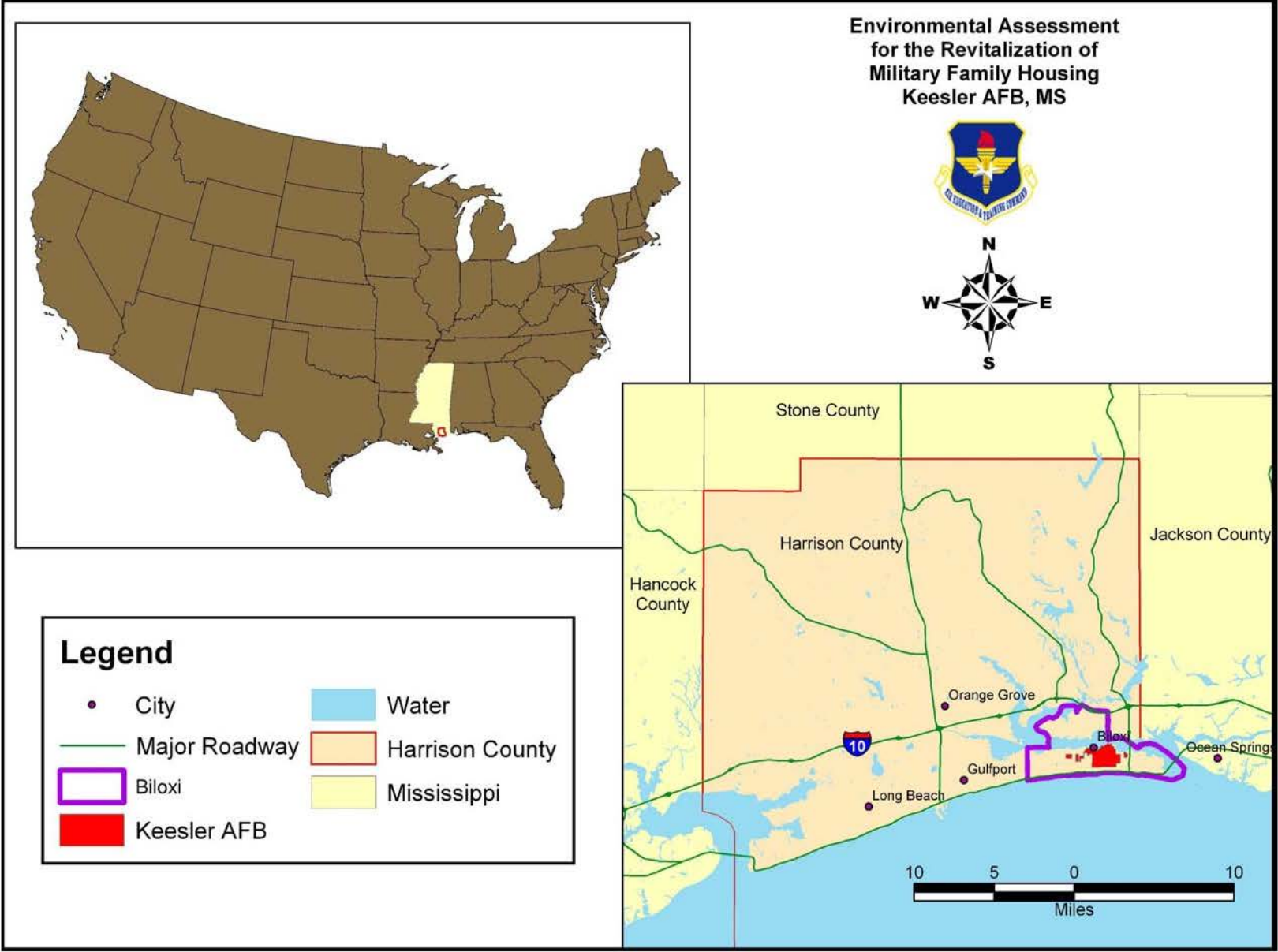
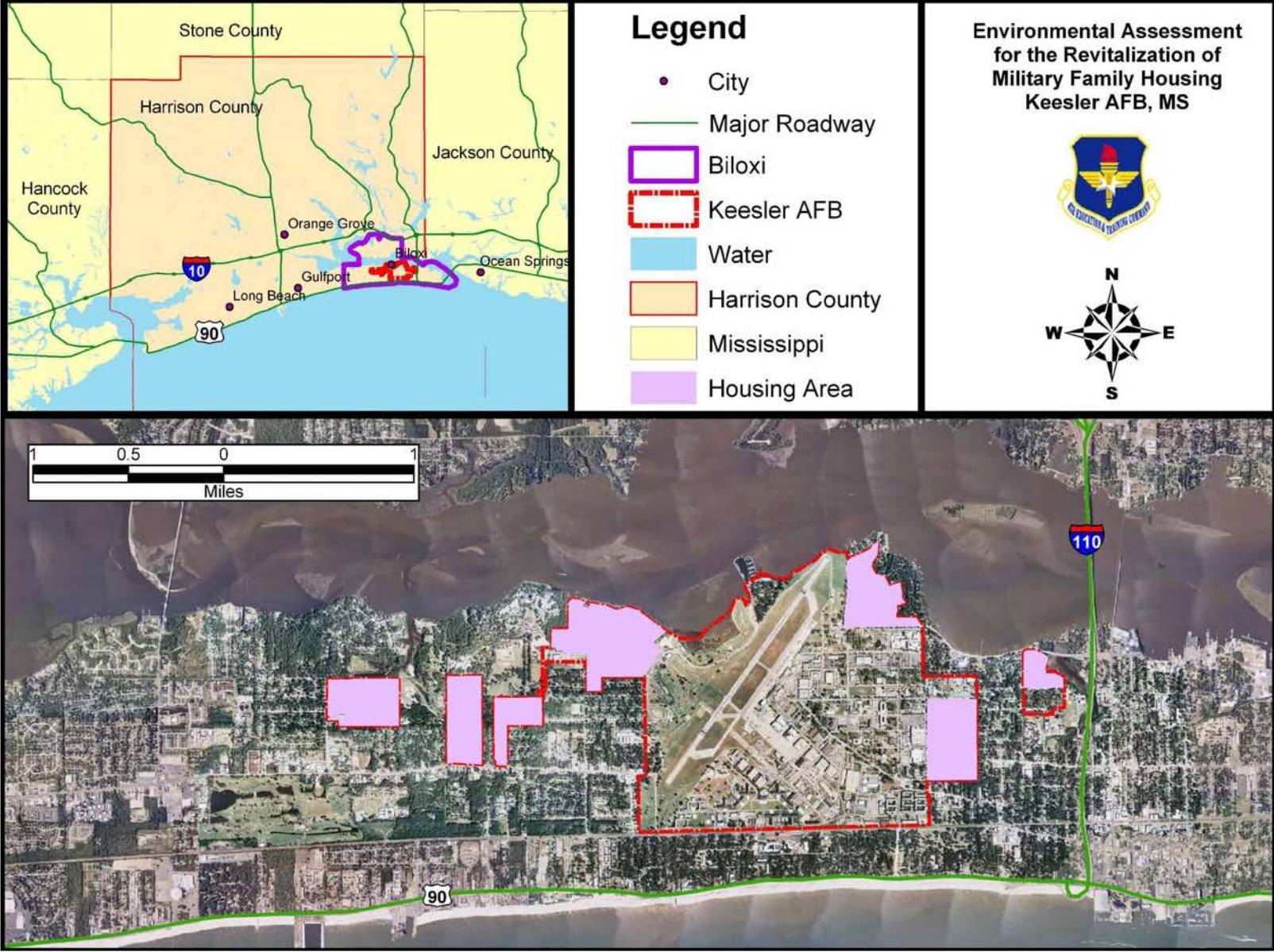


Figure 1-1. Location of Keesler AFB, MS





### **1.4.1 Identification of Environmental Issues Associated With the Proposed Action and Alternatives**

#### **Inapplicable Environmental Issues**

Based on preliminary issue screening, there were no issues or resource areas found to have no applicability to the Proposed Action or Alternatives. Therefore, all issues were carried forward for detailed analysis within this EA.

#### **Applicable Environmental Issues**

The resources that could be impacted and are therefore analyzed in the EA include: cultural/historical resources, earth resources, water resources (including floodplains), biological resources, air quality, land use, socioeconomics and environmental justice, safety and protection of children, infrastructure, solid waste, hazardous materials and wastes, and noise.

## **1.5 APPLICABLE REGULATORY REQUIREMENTS**

### **National Environmental Policy Act**

Federal agencies are required to consider the environmental consequences of Proposed Actions in the decision-making process under the National Environmental Policy Act (NEPA) of 1969. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. In 1978, the CEQ issued regulations implementing the NEPA process under 40 Code of Federal Regulations (CFR) Parts 1500-1508. The CEQ regulations require that the federal agency considering an Action evaluate or assess the potential consequences of the Action or Alternatives to the Action, which may result in the need for an EA or EIS. Under 40 CFR:

- An EA must briefly provide sufficient evidence and analysis to determine whether a FONSI or EIS should be prepared.
- An EA must facilitate the preparation of an EIS if required.

The activities that are addressed within this chapter constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action will include the development of an EA to address the environmental issues related to the proposed activities. The USAF implementing procedures for NEPA are contained in Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR 989 et seq.).

### **Cultural Resources Regulatory Requirements**

The National Historic Preservation Act (NHPA) of 1966 (16 United States Code [USC] § 470) established the National Register of Historic Places (National Register) and the Advisory Council on Historic Preservation (ACHP), outlining procedures for the management of cultural resources on federal property.

### **Clean Air Act**

The Clean Air Act (CAA) (42 U.S. Code [USC] §§ 7401–7671, as amended) provides the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare.

### **Water Resources Regulatory Requirements**

The Clean Water Act (CWA) of 1977 (33 USC § 1251 *et seq.*) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA, EO 11990 (*Protection of Wetlands*), and EO 11988 (*Floodplain Management*) regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands.

### **Other Regulatory Requirements**

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected by any federal action. Also, under the Migratory Bird Treaty Act of 1918 (16 USC §§ 703-712, 3 July 1918, as amended), migratory birds are protected from harm. In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires federal agencies to evaluate the effects of actions on migratory birds with an emphasis on species of concern.

### **Environmental Coordination**

EO 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them time to evaluate the potential environmental impacts of a Proposed Action. Comments from these agencies are subsequently incorporated into the Environmental Impact Analysis Process (EIAP).



On 25 February 2006, the Air Force made the Draft EA and Draft FONSI available to the public at the Biloxi Public Library and sent the documents to the MS Department of Environmental Quality, MS State Historic Preservation Officer, U.S. Fish and Wildlife Service, MS Department of Marine Resources, U.S. Army Corps of Engineers, MS State Clearinghouse, and City of Biloxi Community Development Department. The review period lasted 14 days. No comments associated with the project were received from the public, and none of the aforementioned regulatory agencies noted any concerns associated with the Proposed Action. Additional information associated with the public and agency coordination process is provided in Appendix A.

## **1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT**

This EA is organized into seven chapters. Chapter 1 contains a statement of the purpose and need for the action and the location of the Proposed Action. It also provides a summary of the scope of the environmental review, the decision to be made, identification of applicable regulatory requirements, and a description of the organization of the EA.

Chapter 2 contains a brief introduction, describes the history of the formulation of alternatives, describes the alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, describes the No Action and other action alternatives, summarizes other actions anticipated in the region of influence, and provides a comparison matrix of environmental effects for all alternatives. This section also identifies the preferred alternative and discusses regulatory requirements and/or best management practices (BMPs), as required.

Chapter 3 contains a general description of the current conditions of the resources that could be affected by the Proposed Action. Chapter 4 is an analysis of the environmental consequences of the Proposed Action, the action alternative, and the No Action Alternative. Chapter 5 lists the preparers of this document. Chapter 6 lists persons and agencies consulted in the preparation of this EA. Chapter 7 is a list of source documents relevant to the preparation of this EA. Appendix A contains all interagency correspondence regarding the Proposed Action, and Appendix B contains additional materials that are relevant to the resource areas discussed in Chapters 3 and 4.

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## **2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

### **2.1 INTRODUCTION**

Currently there are 1,588 housing units in the Keesler AFB inventory. Under a separate, previously approved Operations and Maintenance (O&M) project, the Air Force is planning to demolish 710 units damaged by Hurricane Katrina. The Air Force proposes to proceed with the O&M project and, under another MILCON project, demolish an additional 878 units and construct 1,067 units to reach an HRMA requirement of 1,067 housing units. The Air Force may potentially convey ownership of the 1,067 housing units and lease, for a period of 50 years, the land underlying the housing units to a private real estate development and property management company. The private developer may then construct improvements such as community centers and recreational areas. The alternatives involve similar activities as the Proposed Action, but over different time periods. The No Action Alternative would involve no new housing unit construction, or housing privatization. All alternatives meet the minimum Keesler AFB requirement of 1,067 MFH units. This chapter describes the history of the formulation of these alternatives, describes the alternatives in detail, and provides a summary of the activities and issues associated with each alternative.

### **2.2 HISTORY OF THE FORMULATION OF THE ALTERNATIVES**

This initiative required Keesler AFB to assess the status of its current housing inventory and identify actions that would allow for the provision of adequate housing based on Keesler AFB's minimum HRMA housing requirement of 1,067 units. During this process, alternatives were identified that could potentially meet the need for providing Keesler AFB families with adequate housing. The Air Force identified criteria for the development of alternatives, which are described below.

Selection criteria for the alternatives include the following considerations.

- All MFH units must remain within the Keesler AFB boundary due to funding issues. Placing housing off-base would substantially increase the cost, having a negative impact on the project's feasibility.
- All MFH must meet current Air Force housing standards.
- In order to meet the minimum Keesler AFB HRMA requirement, the total number of MFH units must be no less than 1,067.

The damages caused by Hurricane Katrina created an immediate need to house families at Keesler AFB. MILCON would prove to be the most expeditious manner in which to meet this need. While Congress has appropriated funds to provide adequate housing via MILCON, it is not a certainty. Consequently, in the event that MILCON does not occur, the only other viable options are privatization or no action.

### 2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The Air Force considered siting the housing areas outside of the existing MFH footprint, but eliminated this alternative from further consideration due to the constraints of the applied selection criteria.

### 2.4 NO ACTION ALTERNATIVE

Under a separately approved O&M project, the Air Force would demolish 710 units (Figure 2-1) that were substantially damaged by Hurricane Katrina. With the No Action Alternative, the Air Force would continue with the O&M demolition of 710 units. Post Katrina, of the 878 housing units that would remain after completion of the O&M demolition project, all are below current Air Force housing standards and nearly all experienced some form of damage (Table 2-1). Consequently, the Air Force would renovate those units that are damaged, and construct 185 new units to meet the minimum HRMA requirement of 1,067 units. The Air Force would not implement privatization.

**Table 2-1. Existing Keesler AFB Housing**

Existing Housing Area	Number of Units		
	Inventory	O&M Demo	Housing Remaining
Thrower Park	198	102	96
West Falcon	250	134	116
East Falcon	124	0	124
Bay Ridge, Maltby Hall, Shadowlawn	492	129	363
Oak Park	187	187	0
South Pinehaven	152	30	122
North Pinehaven	99	42	57
North Harrison	86	86	0
<i>Total</i>	<i>1,588</i>	<i>710</i>	<i>878</i>

At this time, the exact details of the O&M project are not defined. As a result, the EA utilizes the most reasonably foreseeable development scenario based on existing housing area logistics and design/layout, and assumptions of size and dimension for new construction.

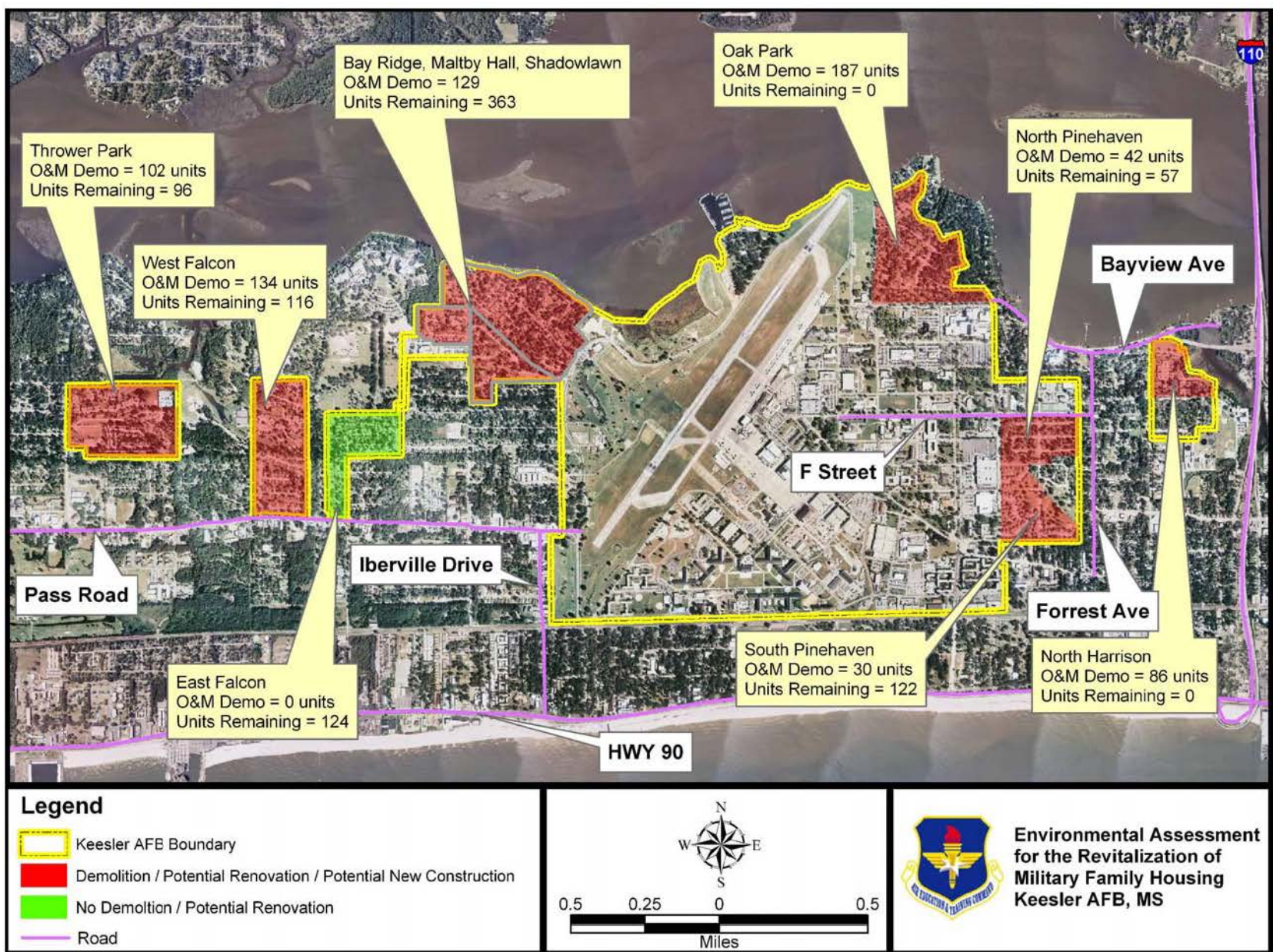


Figure 2-1. No Action Alternative

For analysis purposes within the EA, the Air Force made assumptions for the square footage of the impervious surfaces associated with the units that would be demolished and new unit construction. Since it is unknown at this time what type of units would be constructed, an estimation of the type and square footage of units that may potentially be constructed is based on the following.

- Approximate unit distribution on Keesler AFB:
  - 2-Bedroom: 25%.
  - 3-Bedroom: 50%.
  - 4-Bedroom: 25%.
- Assumed distribution of 185 units that may be constructed by bedroom count based on existing unit distribution, with no 2-Bedroom units constructed:
  - 3-Bedroom: 116 units (62.5% of total)
  - 4-Bedroom: 69 units (37.5% of total)
- Average unit square footage per bedroom count that may be constructed based on maximum gross square footage programming guidelines per bedroom count:
  - 3-Bedroom: 2,036 square feet.
  - 4-Bedroom: 2,880 square feet.
- Average impervious surface area associated with each unit (includes driveways, patios, sidewalks, etc.):
  - 1,275 square feet.

Table 2-2 provides a summary of activities that may occur under the No Action Alternative.

**Table 2-2. Potential Demolition and Construction Under the No Action Alternative**

Number of Units		Approximate Size (Square Feet)		Total Square Footage	Location
		Housing Units	Additional Surface (per unit)		
Demolition					
710		864,083*	1,275	1,769,333	Throughout housing areas
Construction					
3-Bed	116	236,176	1,275	384,076	Throughout housing areas
4-Bed	69	198,720		286,695	
<b>Total</b>	<b>185</b>	<b>434,896</b>	<b>235,875</b>	<b>670,771</b>	

\*Represents total amount of square footage for all 710 housing units

Demolition activities would occur over approximately 50 acres of land and construction activities would occur over approximately 15 acres. Because construction and demolition activities could occur anywhere within the housing areas these numbers are based on actual total



square footage of units and other surfaces to be demolished and constructed, as opposed to utilizing the entire housing area as the demolition or construction footprint.

## 2.5 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action would involve the following activities.

- Over a period of two to three years, through the MILCON and O&M processes, the Air Force would:
  - Demolish all 1,588 existing units.
  - Construct 1,067 new units.
- Once the Air Force completes construction, the Air Force may convey all housing units (1,067) and associated infrastructure (roads and utilities) and lease all underlying land (approximately 293 acres) to one project owner for a period of 50 years. The privatization process may be concurrent with the Air Force O&M and MILCON processes.
- Once privatized, over the 50-year period, the developer may:
  - Renovate, demolish, and/or construct privately owned housing assets.
  - Own, operate, and maintain all housing assets and supporting/associated facilities.
  - Construct an approximately 4,000 square foot management and maintenance building.
  - Construct a community and infrastructure improvements, such as a community center and recreation facilities

Figures 2-2 and 2-3 provide a graphical representation, while Table 2-3 provides a summary of the project activities by housing area for which details are available.

**Table 2-3. Housing Unit Activity Under the Proposed Action**

Existing Housing Area	Existing Inventory	Project-Related Activities			Total End-State Units
		Dem.	Con.	Size of Potential Lease (Acres)	
		Maximum # Units			
Thrower Park	198	198	202	40	1,067
West Falcon	250	250	258	54	
East Falcon	124	124	152	32	
Bay Ridge, Maltby Hall, Shadowlawn	492	492	341	127	
Oak Park	187	187	114	40	
South Pinehaven	152	152	0	0	
North Pinehaven	99	99	0	0	
North Harrison	86	86	0	0	
Total	1,588	1,588	1,067	293	

Dem. = Demolition; Con. = Construction

Source: U.S. Air Force, 2005

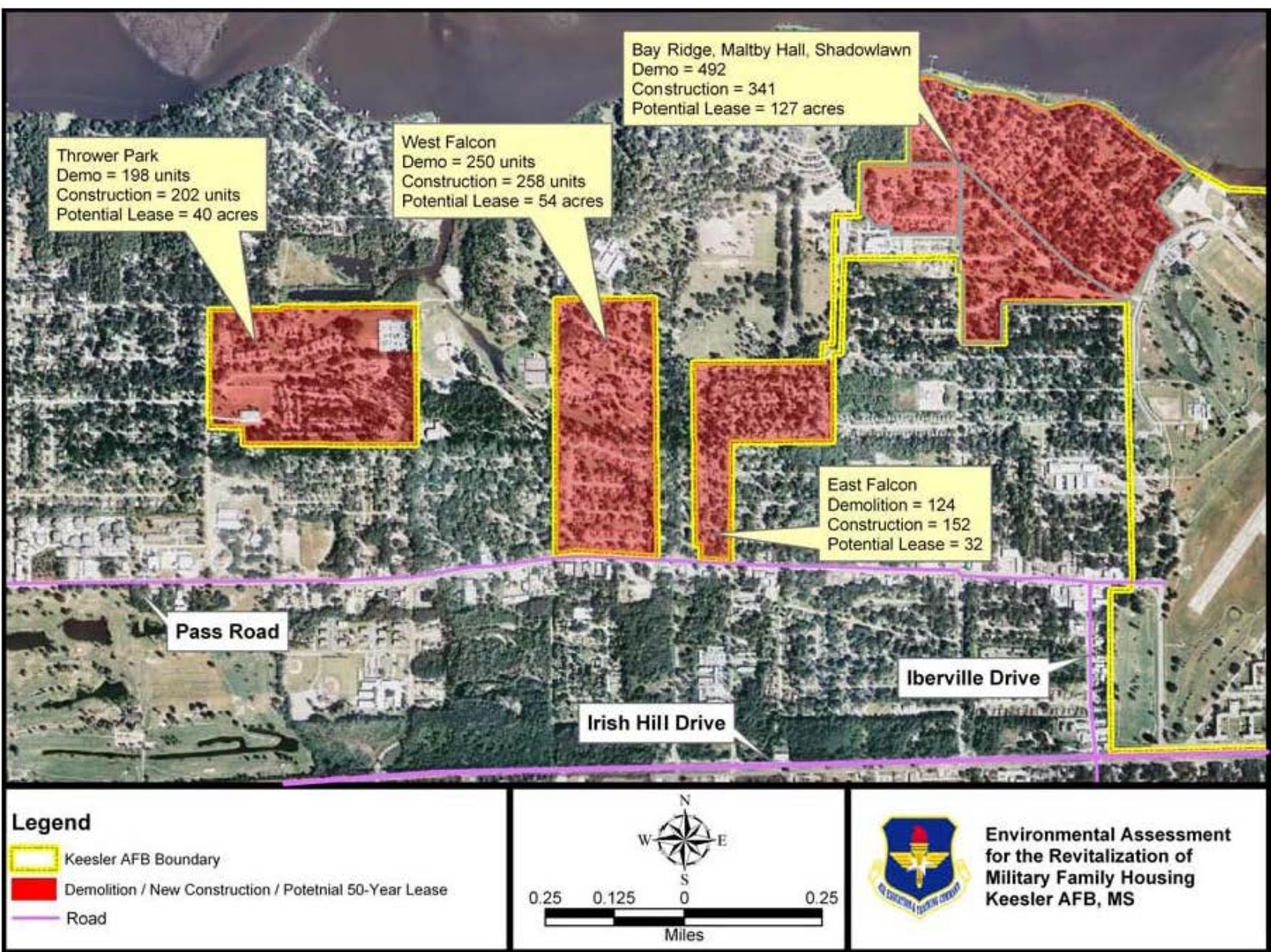


Figure 2-2. Proposed Project Activities for Western Housing Areas



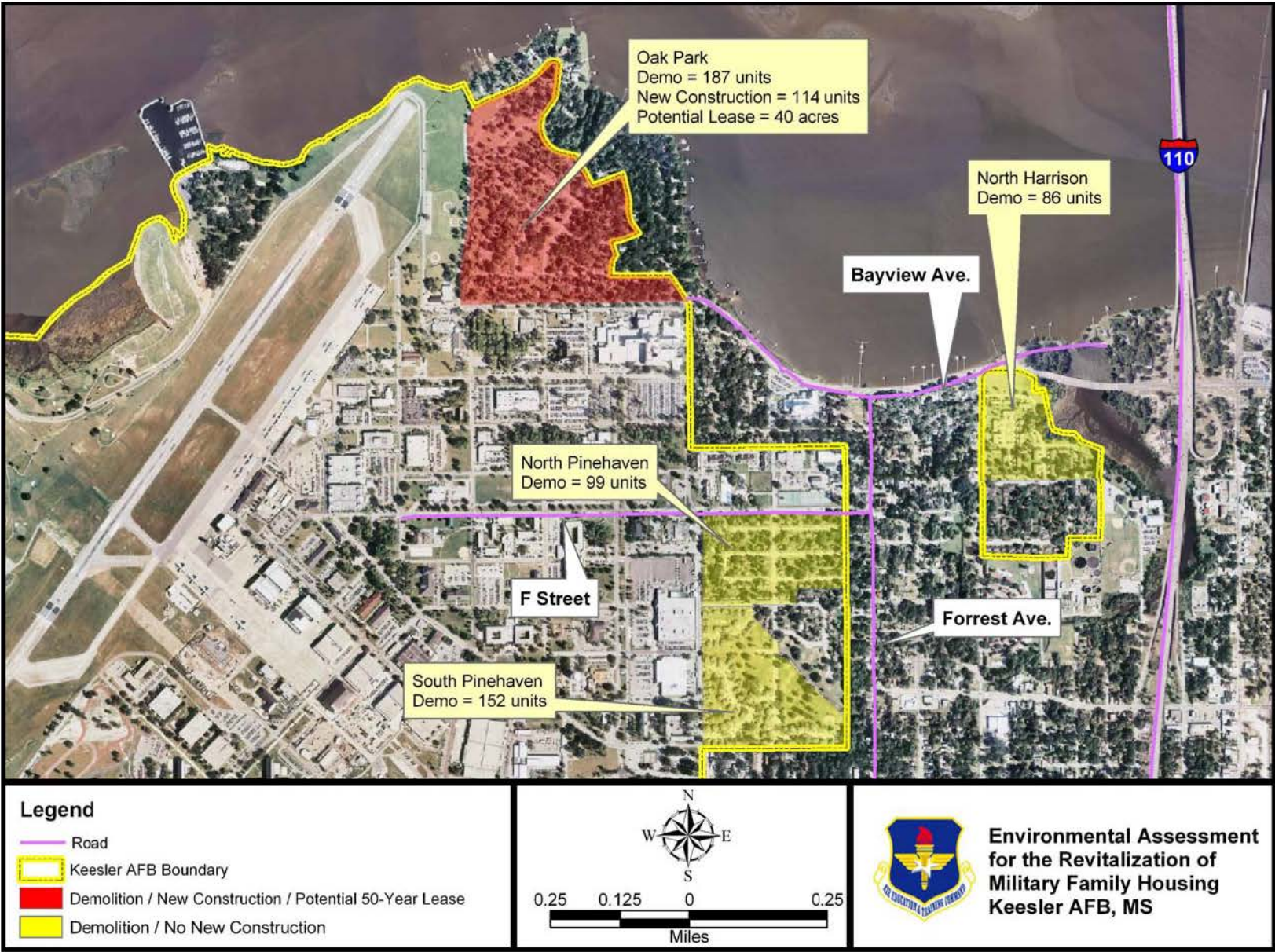


Figure 2-3. Proposed Project Activities for Eastern Housing Areas

Initially, the Air Force, through the MILCON and O&M processes, would conduct all project-related activities associated with the housing units. After completion of the MILCON and O&M processes, the Air Force may potentially convey all housing units and lease the associated land to a private developer. The developer would then own, operate, maintain, and manage a rental housing development to include all paving and drainage, as well as any utilities conveyed to or constructed by the developer. The developer may construct quality-of-life improvements such as community recreation centers, playgrounds, etc., to support the housing areas. While the Air Force assumes that the developer is likely to construct these improvements, the scope of these improvements is unknown at this time (location, size, etc.).

Construction of the new units, as well as infrastructure improvements and potential developer improvements, could take place anywhere within the identified project areas as the exact size and location of construction footprints have yet to be determined. As a result, the EA utilizes the most reasonably foreseeable development scenario for each alternative based on existing housing area logistics and design/layout, and assumptions of size and dimension for new construction.

For analysis purposes within the EA, assumptions are made for construction activities. The estimation of bedroom count and square footage of the 1,067 units proposed for construction is derived from the following.

- Average unit square footage per bedroom count that may be constructed based on maximum gross square footage programming guidelines per bedroom count:
  - 3-Bedroom: 2,036 square feet.
  - 4-Bedroom: 2,880 square feet.
- Average impervious surface area associated with each unit (includes driveways, patios, sidewalks, etc.):
  - 1,275 square feet.
- It is assumed that approximately 80 percent of the 293-acre construction area will be available to build units, with 10 percent used for roads and 10 percent reserved for recreation and support facilities that may be constructed by a developer. On the 234 acres available for units, it is also assumed that half the units constructed would be duplex (at the rate of 6 units per acre) and half would be single-family (at a rate of 4 units per acre).
- Assumptions associated with recreation and support facilities include:
  - Community center (8,000 square feet).

- Three neighborhood recreational facilities in interior family housing areas (12,000 square feet each).
- An Olympic-size swimming pool (approximately 71 feet by 164 feet).
- Twelve covered bus stops.
- A skateboard park (approximately one-quarter acre).
- A mini-storage warehouse to accommodate the need for 50 percent of the housing units (about 53,400 square feet total).

Demolition activities would occur over approximately 385 acres of land (all housing areas). Construction activities would occur over approximately 293 acres of land. Table 2-4 provides a summary of the estimated square footage of units that may be demolished and constructed, as well as the recreation and support facilities that a developer may construct, given the assumptions outlined previously.

**Table 2-4. Demolition and Construction Under the Proposed Action**

Description	Approximate Size (Square Feet)		Quantity	Total Square Footage	Location
	Housing Unit	Additional Surface			
Housing Units					
Demolition					Location to be determined by Air Force.
2, 3, and 4-Bedroom	2,291,012*	1,275	1,588	4,315,712	
Total	N/A		1,588	4,315,712	
Construction					
3-Bedroom	2,036	1,275	762	2,522,982	
4-Bedroom	2,880		305	1,267,275	
Total	N/A		1,067	3,790,257	
Recreation and Support Facilities					
Housing Maintenance Office	4,000		1	4,000	Location to be determined by developer proposal.
Community Center	8,000		1	8,000	
Recreational Facility	12,000		3	36,000	
Olympic-size Swimming Pool	11,644		1	11,644	
Covered Bus Stop	100		12	1,200	
Skateboard Park	10,890		1	10,890	
Storage Unit	100		534	53,400	
Total	N/A		N/A	125,134	

\*Represents total amount of housing unit square footage to be demolished.

Table 2-5 provides an estimated timeline scenario under the Proposed Action. This is based on the assumption that all activities would be completed within five years of project initiation.

**Table 2-5. Projected Timeline Scenario for Housing Unit Construction and Demolition Activities for the Proposed Action**

Activity	Units/Project Year					Total
	1	2	3	4	5	
Demolition						
2, 3, and 4-Bedroom	635	477	476	0		1,588
Construction						
3-Bedroom	305	229	228	0		762
4-Bedroom	120	93	92			305
Housing Maintenance Office	0		1			1
Community Center			1			1
Recreational Facility			1	1	1	3
Olympic-size Swimming Pool			1			1
Covered Bus Stop			5	4	3	12
Skateboard Park			1			1
Storage Unit				294	160	80

## 2.6 ALTERNATIVE 1 (IMMEDIATE PRIVATIZATION ALTERNATIVE)

The Immediate Privatization Alternative would involve the following activities.

- The Air Force would continue with the O&M project, demolishing 710 existing units.
- The Air Force would convey 878 remaining housing units and associated infrastructure (e.g., roads) and utilities to a private real estate development and property management company.
- The Air Force would lease 293 acres to the developer for a period of 50 years.
- Similar to the Proposed Action, the developer, rather than the Air Force, would demolish the remaining 878 units and construct 1,067 new units through a phased approach.
- The developer would construct an approximately 4,000-square-foot management and maintenance building.
- The developer would construct desired features as identified under the Proposed Action.

In all respects, the demolition and construction activities under Alternative 1 are similar to the Proposed Action. However, rather than housing unit demolition and construction activities occurring over a period as few as three years, as under the Proposed Action, housing unit demolition and construction would occur over a period as few as five years under Alternative 1. Demolition activities under the Immediate Privatization Alternative would take place over approximately 385 acres of land. Once the developer has completed all demolition and construction, the developer will own and operate 1,067 family housing units on Keesler AFB.

However, Keesler AFB would retain ownership of the land underlying the housing units and lease the property to the developer for 50 years. Since the demolition and construction activities under Alternative 1 would be the same as those described under the Proposed Action, the estimated total maximum square footage for demolition and construction would be the same as identified in Table 2-4 under Section 2.5 (Proposed Action).

Table 2-6 provides an estimated timeline scenario under Alternative 1, based on the assumption that all activities would be completed within as few as five years of project initiation.

**Table 2-6. Projected Timeline Scenario for Construction and Demolition Activities for the Immediate Privatization Alternative**

Activity	Units/Project Year					Total
	1	2	3	4	5	
Demolition						
O&M	284	213	213	0		710
Developer	351	132	132	132	131	878
Construction						
3-Bedroom	305	115	115	115	112	762
4-Bedroom	122	46	46	46	45	305
Housing Maintenance Office	1					1
Community Center	1					1
Recreational Facility	1	1	1			3
Olympic-size Swimming Pool		1				1
Covered Bus Stop	5	2	2	2	1	12
Skateboard Park			1			1
Storage Unit	245	92	92	92	92	613

## 2.7 ALTERNATIVE 2 (MAXIMUM DEVELOPMENT ALTERNATIVE)

The Maximum Development Alternative would involve the same activities as Alternative 1. However, rather than the developer constructing 1,067 new units, the developer would construct 1,225 new units.

Demolition activities under the Immediate Privatization Alternative would take place over approximately 385 acres of land. Once the developer has completed all demolition and construction, the developer will own and operate 1,225 family housing units on Keesler AFB. Keesler AFB would retain ownership of the land underlying the housing units, however, and lease the property to the developer for 50 years. As with the Proposed Action, the exact square footage of units to be constructed is unknown at this time. An estimate for the maximum gross square footage that the developer could construct was therefore generated utilizing the same parameters as identified under the Proposed Action. The Air Force also assumes that the developer would construct only three and four bedroom units. Table 2-7 provides an estimated total maximum square footage for both construction and demolition.

**Table 2-7. Demolition and Construction Under the Maximum Development Alternative**

Description	Approximate Size (Square Feet)		Quantity	Total Square Footage	Location
	Housing Unit	Additional Surface			
Housing Units					
Demolition					Location to be determined by developer proposal.
2, 3, and 4-Bedroom	2,291,012*	1,275	1,588	4,315,712	
Total	N/A		1,588	4,315,712	
Construction					
3-Bedroom	2,036	1,275	766	2,536,226	
4-Bedroom	2,880		459	1,907,145	
Total	N/A		1,225	4,443,371	
Desired Features					
Housing Maintenance Office	4,000		1	4,000	Location to be determined by developer proposal.
Community Center	8,000		1	8,000	
Recreational Facility	12,000		3	36,000	
Olympic-size Swimming Pool	11,644		1	11,644	
Covered Bus Stop	100		12	1,200	
Skateboard Park	10,890		1	10,890	
Storage Unit	100		613	61,300	
Total	N/A		N/A	133,034	

\*Represents total amount of housing unit square footage to be demolished.

Table 2-8 provides an estimated timeline scenario under Alternative 2, based on the assumption that all activities would be completed within as few as five years of project initiation.

**Table 2-8. Projected Timeline Scenario for Housing Unit Construction and Demolition Activities for the Maximum Development Alternative**

Activity	Units/Project Year					Total
	1	2	3	4	5	
Demolition						
O&M	284	213	213	0		710
Developer	351	132	132	132	131	878
Construction						
3-Bedroom	306	115	115	115	115	766
4-Bedroom	184	69	69	69	68	459
Housing Maintenance Office	1					1
Community Center	1					1
Recreational Facility	1	1	1			3
Olympic-size Swimming Pool		1				1
Covered Bus Stop	5	2	2	2	1	12
Skateboard Park			1			1
Storage Unit	245	92	92	92	92	613



## **2.8 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS IN THE REGION OF INFLUENCE**

Cumulative impacts to environmental resources result from incremental effects of Proposed Actions when combined with other past, present, and reasonably foreseeable future projects in the region of influence of the project. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, or recently completed is required. Short- and long-term planning efforts at Keesler AFB include this action as well as several others.

Keesler AFB and the local community update facilities on a continual basis as necessary. These planned activities have the potential to generate environmental impacts that could exacerbate impacts associated with the proposal described in this chapter unless projects are planned and implemented with consideration for this potential. Each of the actions listed in the proceeding sections either have been or will be the subject of subsequent NEPA analysis, which will evaluate the existing environment at the time of each proposal. The existing environment described in each of those subsequent NEPA documents will include the actions of this proposal.

Recently completed projects at Keesler AFB include the following (U.S. Air Force, 2004a).

### **Demolition –**

Thompson Hall, Facility 4227 (Completed in Fiscal Year (FY) 2004).  
Hangar One, Facility 4201 (FY2004).  
Army and Air Force Exchange Service Gas Station (FY2004).  
Hangar 4253 (FY2004).  
738<sup>th</sup> Transportation Buildings 4252, 4253, and 4259 (FY2004).  
Triangle Dormitory, Facility 7202 (FY2005).  
62 housing units at South Pinehaven.  
36 housing units at Oak Park.

### **Major Construction –**

152 Housing Units, South Pinehaven (FY2000-01) – *Construct three and four bedroom homes in South Pinehaven.*  
Training Facility Phase 2 (FY2002) – *Construct a 165,000-square-foot, three-story training facility for replacement of Hangars 1 and 2.*  
Air Force Reserve Command Two-bay Hangar (FY2002) – *Construct a new 52,700-square-foot, two-bay hangar for C130J aircraft.*  
Student Dormitory No. 8 (FY2003) – *Construct a new 110,000-square-foot student dormitory having 200 rooms in Triangle Area. Project will demolish existing dorm 7202.*

Student Mini Base Exchange (FY2003) – *Construct mini-mall of 28,000 square feet.*

Army and Air Force Exchange Service Shoppette and Car Care Center (FY2003) – *Construct a new 20,100-square-foot facility to include shoppette, car repair center, food restaurant, and 12-dispenser gas station.*

Child Development Center Addition (FY2004) – *Construct 14,000-square-foot addition to existing facility. Includes six classrooms, indoor playroom, service areas, and offices.*

Air Force Reserve Command C-130 Fuel Maintenance Facility (FY2004) – *Construct a fuel cell maintenance hangar for C130 aircraft.*

Air Force Reserve Command Aircraft Rinse Facility (FY2004) – *Construct aircraft rinse facility on Taxiway C.*

Future projects planned through FY2015 at Keesler AFB include the following (U.S. Air Force, 2004b).

Demolition –

Cody Hall, Facility 4202 (FY2006).

South Harrison Court (FY2006).

Defense Reutilization and Marketing Office (DRMO) Facilities 4422 and 4423 (FY2006).

Triangle Dormitory, Facility 7502 (FY2008).

Major Construction –

Student Dormitory No. 9 (FY2006) – *Construct a new 136,000-square-foot student dormitory having 250 rooms in Triangle Area. Project will demolish existing dorm 7502 and DRMO facilities.*

Training Facility Phase 3 (FY2006) – *Construct a 69,000-square-foot, three-story training facility for replacement of training in Hangar 3.*

Small Arms Firing Range (FY2006) – *Construct a 27,000-square foot indoor firing range, including classrooms, administration, range, storage, weapons cleaning, bathrooms, a mechanical room, utilities, fire protection, and bullet catch systems.*

Services/Furniture Management Office (SV/FMO) Warehouse (FY2006) – *Construct a 40,000-square-foot SV/FMO warehouse, including areas for dormitory furniture storage, lodging operations and services general storage, restrooms, office space, and a mechanical room.*

Air Force Reserve Command (AFRC) Aerial Port Facility (FY2007) – *Construct a two-story, 26,300-square-foot aerial port facility for AFRC C130J aircraft support.*



- Visiting Quarters (FY2007) – *Construct a five-story 160,000-square-foot, 320-room visiting quarters to include laundries, lobby, and housekeeping areas.*
- Student Dormitory No. 10 (FY2008) – *Construct a new 136,000-square-foot student dormitory having 250 rooms in Triangle Area.*
- Training Facility Phase 4 (FY2008) – *Construct a 142,000-square-foot, three-story training facility for replacement of training in Allee Hall.*
- Student Center (FY2009) – *Construct a new 69,900-square-foot student center to include a fitness center, indoor pool, and recreation center to support trainees. Project will demolish existing pool, recreation center, and Triangle Fitness.*
- Fire/Crash Rescue Station (FY2010) – *Construct a new 39,000-square-foot fire/crash rescue station with 10 drive-through bays. Project will demolish existing facility.*
- Renovate Training Facility (Bryan Hall) (FY2010) – *Renovate 111,000-square-foot training facility.*
- Air Force Reserve Command Aeromedical Staging Facility (FY2011) – *Construct a new 11,100-square-foot facility to support Reserve AFRC squadron.*
- New Division Street Entry (FY2012) – *Construct a new installation entry point at the Division Street location between North and South Pinehaven housing areas, including a visitors center, inspection area, gate house, and new entry road.*
- Renovate Training Facility (Jones Hall) (FY2012) – *Renovate 102,000-square-foot training facility.*
- Permanent Party Dormitory Phase 1 (FY2012) – *Construct a new 11,100-square-foot facility to house 144 permanent party personnel.*
- Training Aids Support Facility (FY2012) – *Construct a new 34,000-square-foot facility to support training aids.*
- Consolidated 81<sup>st</sup>/403<sup>d</sup> Warehouse and Mobility Facility (FY2013) – *Construct a new 30,000-square-foot facility warehouse to store mobility supplies and equipment and for processing equipment and personnel for deployment.*
- Permanent Party Dormitory Phase 2 (FY2014) – *Construct a new 11,100-square-foot facility to house 144 permanent party personnel.*
- Dining Facility (FY2015) – *Construct a new 20,000-square-foot, 1,000-person dining facility for permanent party personnel.*

Due to traffic congestion on Highway 90, the main east-west arterial on the Biloxi Peninsula, the Mississippi State Highway Department (MDOT) is evaluating options for providing an additional connection between I-10 and U.S. 90. The development of an EIS has been approved by the Federal Highway Administration for this project and is currently underway. The preferred

route follows the western boundary of the West Falcon Housing area. Proposed interchanges for the new north-south highway are at U.S. 90, Pass Road, and Popps Ferry Road.

### ***Hurricane Katrina Recovery Efforts***

At Keesler AFB, the following projects have been identified as part of Hurricane Katrina recovery efforts:

- Construct New Munitions Inspection Facility
- Construct New Refuel Maintenance Facility
- Replace Base Exchange
- Replace Commissary
- Replace Postal Center
- Replace Base Library
- Hospital Repair/Recovery
- Base Post Office Repair/Recovery
- Base Fire Station Repair/Recovery
- Replace Hangar 5
- Replace Recreation Center
- Construct New Golf Course Club House

From a regional perspective, the entire Mississippi Gulf Coast is currently involved in a massive recovery effort from Hurricane Katrina. Specifically, the city of Biloxi estimates that more than one-fifth (more than 5,000) of the city's structures (to include housing) were destroyed by the hurricane, with many others experiencing some damage. Many of the city's roadways and bridges were damaged or destroyed; many still have only limited access (City of Biloxi, 2006). Biloxi is currently in the process of restoring damaged buildings, roadways, and bridges, and rebuilding new structures, as is the rest of the Gulf Coast. The list of specific recovery efforts in and around the region is extensive (more information can be found at the city of Biloxi's website, <http://www.biloxi.ms.us>, and at the Governor of Mississippi's Commission on Recovery, Rebuilding, and Renewal's website, <http://www.mississippirenewal.com>); however, most recovery efforts would involve demolition and construction of structures and infrastructure to some degree.

## 2.9 SUMMARY OF POTENTIAL IMPACTS

Table 2-9 is a summary of potential impacts by Resource Area and Alternative.

**Table 2-9. Summary of Potential Impacts**

Resource Area	Proposed Action	Alternative 1- Immediate Privatization Alternative	Alternative 2 – Maximum Development Alternative	No Action Alternative
Earth Resources	There would be an overall decrease in the amount of impervious surface within the housing areas at Keesler AFB. Construction and design best management practices (BMPs) would be employed to minimize the potential for erosion. Examples of BMPs are sedimentation ponds and well-maintained silt fencing, which limit or eliminate soil movement, stabilization of runoff and sedimentation control during construction. Specific BMPs to be employed would be determined by permitting requirements associated with the project. Given the implementation of BMPs and permit requirements, no adverse impacts are anticipated.	Potential impacts and associated coordination would be the same as those described under the Proposed Action. Thus, there would be minimal impacts.	There would be an approximate 20-percent increase in the amount of impervious surface throughout the housing areas. Although the potential for impacts is slightly higher relative to more development under this Alternative, the same BMPs and permitting requirements would apply as those described previously. As a result, impacts to water resources under Alternative 1 are expected to be minimal.	Impacts would be similar to the Proposed Action, although the decrease in impervious surface would be greater under the No Action Alternative. Thus, there would be minimal impacts.
Water Resources	There would be a net decrease in the amount of impervious surface and, therefore, a decrease in stormwater runoff. Any potential impacts to stormwater associated with the Proposed Action would be managed through the implementation of a stormwater pollution prevention plan as part of the construction permit requirements enforced by USEPA and the State of Mississippi, which would include the use of appropriate construction BMPs. Given the implementation of BMPs and permit requirements, no adverse impacts are anticipated.	Potential impacts and associated coordination would be the same as those described under the Proposed Action. Thus, there would be minimal impacts.	There would be a net increase in the amount of impervious surface and, therefore, an increase in stormwater runoff. Any potential impacts, permit requirements, and BMPs associated with stormwater under Alternative 1 would be the same as those described under the Proposed Action. Given the implementation of BMPs and permit requirements, no adverse impacts are anticipated.	Impacts would be similar to the Proposed Action, although the decrease in impervious surface would be greater under the No Action Alternative. Thus, there would be minimal impacts.

**Table 2-9. Summary of Potential Impacts Cont'd**

<b>Resource Area</b>	<b>Proposed Action</b>	<b>Alternative 1- Immediate Privatization Alternative</b>	<b>Alternative 2 – Maximum Development Alternative</b>	<b>No Action Alternative</b>
Biological Resources	The Proposed Action is not expected to have an impact on threatened or endangered flora or fauna because there are none known to occur on Keesler AFB, and activities would occur in areas that are already substantially disturbed. There would be no wetlands directly impacted by the action. However, permit-related BMPs would be required to minimize the potential for indirect erosional impacts to wetland areas adjacent to project areas. Demolition activities would occur within the 100-year floodplain. No new construction would occur within the 100-year floodplain, and there would be no adverse impacts to the utility of functionality of the floodplain. No adverse impacts to biological resources is anticipated.	Potential impacts and associated coordination would be the same as those described under the Proposed Action. Thus, there would be minimal impacts.	Potential impacts and associated coordination would be the same as those described under the Proposed Action. Thus, there would be minimal impacts.	Potential impacts would be the same as those described under the Proposed Action, only on a smaller scale because there would be less demolition and new construction. Consequently, the scale of impact would be less than the Proposed Action. Thus, there would be minimal impacts.
Air Quality	As a result of demolition and construction activities under the proposal, annual emissions for criteria pollutants over the life of the project (5 years) would increase during the duration of the activities. However, all emissions would be less than 10-percent of Harrison County's annual average emissions. Although Harrison County is in attainment for all criteria pollutants and therefore a conformity determination is not required, the 10-percent criteria is still utilized in the EA analysis for comparison purposes to gauge potential impacts. Because estimated emissions are less than 10-percent of the county's emissions, it is expected that these additional emissions would not result in any long-term impacts on the air quality of Harrison County.	Potential impacts and associated coordination would be the same as those described under the Proposed Action. Thus, there would be minimal impacts.	As with the Proposed Action, all emissions under Alternative 1 would be less than 10-percent of Harrison County's annual average emissions. Because estimated emissions are less than 10-percent of the county's emissions, it is expected that these additional emissions would not result in any long-term impacts on the air quality of Harrison County.	Potential impacts would be the same as those described under the Proposed Action, only on a smaller scale because there would be less demolition and new construction. There would be only a minimal increase in air emissions associated with the demolition activity. Consequently, no adverse impacts to air quality would occur.

**Table 2-9. Summary of Potential Impacts Cont'd**

<b>Resource Area</b>	<b>Proposed Action</b>	<b>Alternative 1- Immediate Privatization Alternative</b>	<b>Alternative 2 – Maximum Development Alternative</b>	<b>No Action Alternative</b>
Land Use	None of the proposed activities would cause a change in the governing land use plan. Housing units would be removed from the Clear Zone along the northeastern edge of the airfield at Oak Park, thus resulting in a beneficial impact. No adverse impacts associated with land use are anticipated.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.
Noise	Minor short-term noise associated with demolition and construction activities would occur. However, the installation is dominated by aircraft noise and the amount of noise created by demolition and construction activities is minimal in comparison. Noise associated with residential activities would be close to baseline. The Proposed Action would not contribute to the existing noise environment of Keesler AFB in any appreciable manner.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action, only on a smaller scale because there would be less demolition and new construction. Consequently, no adverse impacts would occur.
Hazardous Materials/Waste	There are no Installation Restoration Program (IRP) sites located within any of the proposed construction sites. Construction and demolition (C&D) activities would not involve the use of any hazardous materials, with the exception of fuel. However, these activities would generate asbestos and lead-based paint waste. These materials would be handled and disposed of in accordance with Air Force guidance and plan requirements. No adverse impacts associated with hazardous materials or wastes are anticipated.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action, only on a smaller scale because there would be less demolition and new construction. Consequently, no adverse impacts would occur.

Table 2-9. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1- Immediate Privatization Alternative	Alternative 2 – Maximum Development Alternative	No Action Alternative
Solid Waste	Based on landfill capacity and current use rates, C&D debris would be recycled and/or reused (to the extent practicable) and remaining wastes would be distributed among the five local landfills to avoid placing a burden on landfill capacity. Consequently, no adverse impacts are anticipated.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Alternative 1 would generate more C&D debris than the Proposed Action. However, based on landfill capacity and current use rates, C&D debris would be recycled and/or reused (to the extent practicable) and remaining wastes would be distributed among the five local landfills to avoid placing a burden on landfill capacity. As a result, there would be a negligible impact on the local landfills.	Amounts of solid waste would be substantially less than the Proposed Action, Alternative 1, or Alternative 2. No impacts to local landfills are anticipated.
Infrastructure	Minor short-term disruptions in utility services associated with construction and demolition may occur; however, these would be localized and of short duration. There would be only a small, short-term increase in the amount of utility use in the surrounding area due to the influx of workers to the area. No long-term adverse impacts to transportation or utility system components are anticipated as a result of this proposal.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts would be the same as those described under the Proposed Action and no adverse impacts are anticipated.	No impacts would be anticipated to utilities or transportation facilities under the No Action Alternative.
Socioeconomics and Environmental Justice	There would be no substantial population changes within the region of influence. The number of workers that may migrate to the area as a result of the Proposed Action is estimated at about 473, which is less than 1 percent of the total population of Harrison County. There would be a minor benefit to the local economy associated with the influx of workers, potential job creation, and monetary expenditures associated with infrastructure changes as a result of implementing the proposal.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Impacts as a result of Alternative 1 would be expected to be similar to the Proposed Action.	Job creation and monetary expenditures would be substantially less than the Proposed Action, Alternative 1, or Alternative 2. However, there would still be minimal economic benefit to the local community.

**Table 2-9. Summary of Potential Impacts Cont'd**

<b>Resource Area</b>	<b>Proposed Action</b>	<b>Alternative 1- Immediate Privatization Alternative</b>	<b>Alternative 2 – Maximum Development Alternative</b>	<b>No Action Alternative</b>
Cultural Resources	Wherry and Capehart housing units are approved for demolition under a Programmatic Agreement between the Air Force and other consulting parties. There are no other historical or archaeological resources within the proposed project locations. As a result, no cultural resources would be impacted from the Proposed Action.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	As with the Proposed Action, there are no historical or archaeological resources within the proposed project locations. As a result, no cultural resources would be impacted from Alternative 1.	There are no historical or archaeological resources within existing housing areas. As a result, no cultural resources would be impacted from the No Action Alternative.
Safety/Protection of Children	During normal construction activities, catastrophic accidents are rare. Strict adherence to all applicable occupational safety requirements would minimize the relatively low risk associated with these activities. Safety concerns associated with the C&D activities under the Proposed Action may pose special risks to children. The developer would be required to include project design and safety precautions to protect children in the residential areas surrounding the work sites.	Potential impacts would be the same as those described under the Proposed Action. Consequently, no adverse impacts would occur.	Potential impacts and associated BMPs would be the same as those described under the Proposed Action and the potential for adverse impacts is expected to be minimal.	Safety impacts and special risks to children, as well as associated BMPs and regulatory requirements resulting from demolition activities would be the same as those described under the Proposed Action.

## 2.10 SUMMARY OF REGULATORY REQUIREMENTS AND BEST MANAGEMENT PRACTICES

State and federal agency consultation and review of Keesler AFB's privatization proposal will be required in compliance with federal and state law. The following regulatory requirements would be mandatory for implementation of the Proposed Action and Alternatives (to include the No Action Alternative).

- A National Pollutant Discharge Elimination System (NPDES) Permit, required for construction activities covering more than one acre of land area, would be required. Requirements associated with this permit would include the following:
  - Utilization of temporary erosion control measures (such as sediment traps/basins, silt fencing, hay bales, and seeding) to minimize erosion during construction and demolition.
  - A Stormwater Pollution Prevention Plan (SWPPP) would be required for new development. This plan would include requirements to:
    - Create site designs that would minimize the amount of impervious surface area in each development.
    - Design the site and accompanying stormwater controls in such a way as to return the peak discharge to a rate similar to that of the previously undeveloped area.
    - Design and construct paved surface areas to incorporate a slope sufficient enough to direct potential runoff away from surface waters and wetland areas.
    - Design and construct all drainage improvements and related infrastructure in such a manner that the natural hydrologic conditions are not severely altered.
    - Utilize permanent stormwater runoff minimization techniques, including concrete grid and modular pavement, detention basins, exfiltration trenches, level spreaders, stormwater retention basins, or similar techniques.
- Installation of air-emitting external combustion stationary sources (boilers, gas water heaters, etc.) would be subject to New Source Review under Keesler AFB's Title V Air Permit.
- In the event that unrecorded cultural resources are encountered during project activities, the State Historic Preservation Officer (SHPO) should be contacted immediately (Mississippi Department of Archives and History, 2006). This would be coordinated through 81 CES/CEVH.

The following BMPs would be implemented as part of the Proposed Action and Alternatives (to include the No Action Alternative), thereby minimizing the potential for adverse impacts to the human or natural environment.



- Reasonable precautions would be taken to reduce fugitive emissions of particulate matter during demolition and construction.
- Proper handling and disposal of hazardous materials.
- Provision of adequate measures to restrict access to construction and demolition sites and consider all aspects of child safety during work and non-work hours.
- Maintenance of restricted access during work hours, site preparation, and non-work hours.
- Minimization of slip/trip/fall hazards associated with demolition and construction activities.
- Incorporation of specific engineering design and traffic studies into site plans and related road systems for each new housing area developed. The objective of these reviews would be to make sure that future circulation patterns and new intersections do not create inadequate levels of service at new or existing intersections or along existing roads.
- Recycling and reuse of C&D debris (to the extent practicable).
- Distribution of C&D debris among the five local landfills.
- Notification of Environmental Flight immediately if any unusual odor or soil or groundwater coloring is observed during construction or demolition activities.
- Avoidance of tank areas during construction and demolition activities.
- Utilization of a certified contractor when removing asbestos-containing building materials.
- Environmental Flight review of all construction project programming documents, designs, and contracts for appropriate abatement and disposal requirements for Lead Based Paint (LBP) and asbestos containing materials.
- Any discovered polychlorinated biphenyls (PCBs) would be turned in to the Defense Reutilization and Marketing Office for proper disposal.
- Proper disposal of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 and Mississippi Department of Environmental Quality (MDEQ) requirements.
- Report of all spills and accidental discharges of petroleum, oil, and lubricants (POLs), chemicals, hazardous waste, or hazardous materials on Keesler AFB, regardless of the quantity.

The potential permits that would be required and the BMPs that would be implemented, as listed above, as part of the Proposed Action and Alternatives are further discussed in Chapter 4 of this document. The developer is responsible for compliance with all applicable federal, state, and local laws, rules, and regulations, including acquiring all applicable permits and the implementation of permit requirements and BMPs identified within the Housing Privatization RFP and subsequent development plan.

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### **3. AFFECTED ENVIRONMENT**

Chapter 3 describes the existing environmental and socioeconomic conditions of the areas affected by the Proposed Action and Alternatives. Chapter 4 describes the potential environmental and socioeconomic impacts of implementing the Proposed Action and Alternatives.

In compliance with NEPA, CEQ guidelines, and 32 CFR 989, the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These resources and conditions include earth resources, water resources (including floodplains), biological resources, air quality, land use, noise, hazardous materials and wastes, solid waste, infrastructure, socioeconomics and environmental justice, cultural resources, and safety and protection of children.

#### **3.1 INSTALLATION LOCATION, HISTORY, AND CURRENT MISSION**

##### **3.1.1 Location**

Keesler AFB occupies 1,678 acres within the boundaries of the city of Biloxi, which is located in Harrison County, Mississippi. Keesler AFB is situated on the lower end of the Biloxi Peninsula, which is eight miles long (east-to-west) and one mile wide. A one-half mile wide estuary, called the Back Bay of Biloxi, separates the Biloxi peninsula from the mainland to the north. Approximately 12 miles offshore from the peninsula is a chain of narrow barrier islands. The waters between the peninsula and the barrier islands constitute the Mississippi Sound. Keesler AFB includes these areas: the main base, East/West Falcon and Harrison Court Family Housing, Thrower Park Family Housing, and the Small Arms Range.

##### **3.1.2 History and Current Mission**

The Air Force established Keesler AFB in 1941 as a training center for B-24 Liberator aircraft mechanics. After World War II, Keesler AFB was designated a permanent military base. Today training opportunities at Keesler include fields such as maintenance, radio and radar systems maintenance, communications electronics, computer systems programming and maintenance, and air traffic control. The Keesler Medical Center is a teaching hospital for Air Force doctors, nurses and medical technicians, and includes multiple outpatient clinics, a clinical research laboratory, and aero medical facilities. The flying mission at Keesler consists of the 403<sup>rd</sup> Wing, which conducts all-weather reconnaissance missions in the Gulf area for the DoD, and the 45<sup>th</sup> Airlift Squadron, which trains pilots to fly the Learjet C-21A for global passenger airlift operations (U.S. Air Force, 2004a).

Keesler AFB is home to the 81<sup>st</sup> Training Wing (TRW), one of the largest technical training wings in AETC. The principal mission of the 81<sup>st</sup> TRW is to provide military training for active and reserve officers and airmen. Other missions at Keesler AFB include Headquarters Second Air Force, the 403<sup>rd</sup> Wing (AFRC), 53<sup>rd</sup> Weather Reconnaissance Squadron (53 WRS), 815<sup>th</sup> Airlift Squadron (815 AS), 85<sup>th</sup> Engineering Installation Squadron (85 EIS), 57<sup>th</sup> Aeromedical Evacuation Squadron detachment, and the 81<sup>st</sup> Medical Group (U.S. Air Force, 2004a).

## **3.2 EARTH RESOURCES**

### **3.2.1 Definition of the Resource**

Earth resources include topography, geology, and soils. Topography refers to the configuration of the land surface, including its relief and the position of its natural and man-made features. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term “soils” refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink-swell potential, and erodibility all determine the suitability of the ground to support man-made structures and facilities. These resources may have scientific, historical, economic, and recreational value.

The Region of Influence (ROI) for earth resources includes the area immediately underlying the Keesler AFB MFH areas that comprise Thrower Park, West Falcon Park, East Falcon Park, Bay Ridge, Maltby Hall, Shadowlawn, Oak Park, South Pinehaven, North Pinehaven, and North Harrison.

### **3.2.2 Existing Conditions**

#### **Topography**

The Gulf Coast Geosynclines, a large sinking trough of delta-deposited sediments in the Gulf of Mexico, dominates the regional geologic structure. Records of on-base drilling show recent and coastal deposits directly overlying the Graham Ferry formation containing layers of gumbo, shells, clay, sand, and shale. Keesler AFB is located within the Pamlico Plain, a major landform in the East Gulf subdivision of southern Mississippi. The Pamlico Plain is generally flat or gently undulating with elevations averaging from 5 to 30 feet above mean sea level (MSL) (U.S. Air Force, 2000).

#### **Geology**

A series of unconsolidated estuarine and deltaic sediments ranging in age from Miocene to Recent underlies the coastal area of Mississippi. These sediments are not easily separated into stratigraphic units and are usually differentiated first on the basis of paleontological evidence,

then on the basis of lithology. The significant geologic units present beneath Keesler AFB include Pleistocene and Recent coastal and terrace deposits and alluvium. Local relief on Keesler AFB is primarily the result of past depositional and more recent erosional processes such as hurricanes. The Citronelle, Graham Ferry, and Pascagoula Formations (Pliocene) and the Hattiesburg Formation and Catahoula Sandstone (Miocene) underlay these Recent deposits (U.S. Air Force, 1997).

## Soils

Regional soils are predominately derivatives of beaches, dunes, marine estuaries, tidal flats, and low terraces. Local lowlands and marshes are found on silty organic soils, whereas uplands are well drained, nutrient-poor soils consisting of sands and silty loams. Table 3-1 shows the soil types present on the subject properties. Figure 3-1 provides a graphical representation of the soil types found in the housing areas. Sandy or loamy upland materials provide the foundation for the dominant soil types on the properties. Most soils have low erosion potential under normal conditions (natural vegetative cover, average rainfall, etc.), low shrink-swell potential, and are nutrient poor. Such sandy soils have a good to fair drainage capability and estimated bearing capacity of 3,000 to 5,000 pounds per square foot (U.S. Air Force, 2000).

**Table 3-1. Soil Types on Subject Properties**

	<b>Eustis</b>	<b>Eustis and Poarch</b>	<b>Plummer</b>	<b>Lakeland</b>	<b>Harleston</b>
<b>Housing Area</b>	Loamy sand (0 - 5% slope)	8 - 17% slope	Loamy sand (0 - 2% slope)	Fine sand (0 - 5% slope)	Fine, loamy sand (0 - 2% slope)
Parcel A – Thrower Park	√			√	
Parcel B – West Falcon	√			√	√
Parcel C – East Falcon	√		√		
Parcel D – Bay Ridge, Maltby Hall, Shadowlawn	√	√		√	
Parcel E – Oak Park	√				
Parcel E-1 – Oak Park	√				
Parcel F – South Pinehaven	√				√
Parcel G – North Pinehaven	√				
Parcel H – North Harrison	√			√	

Source: U.S. Air Force, 2000

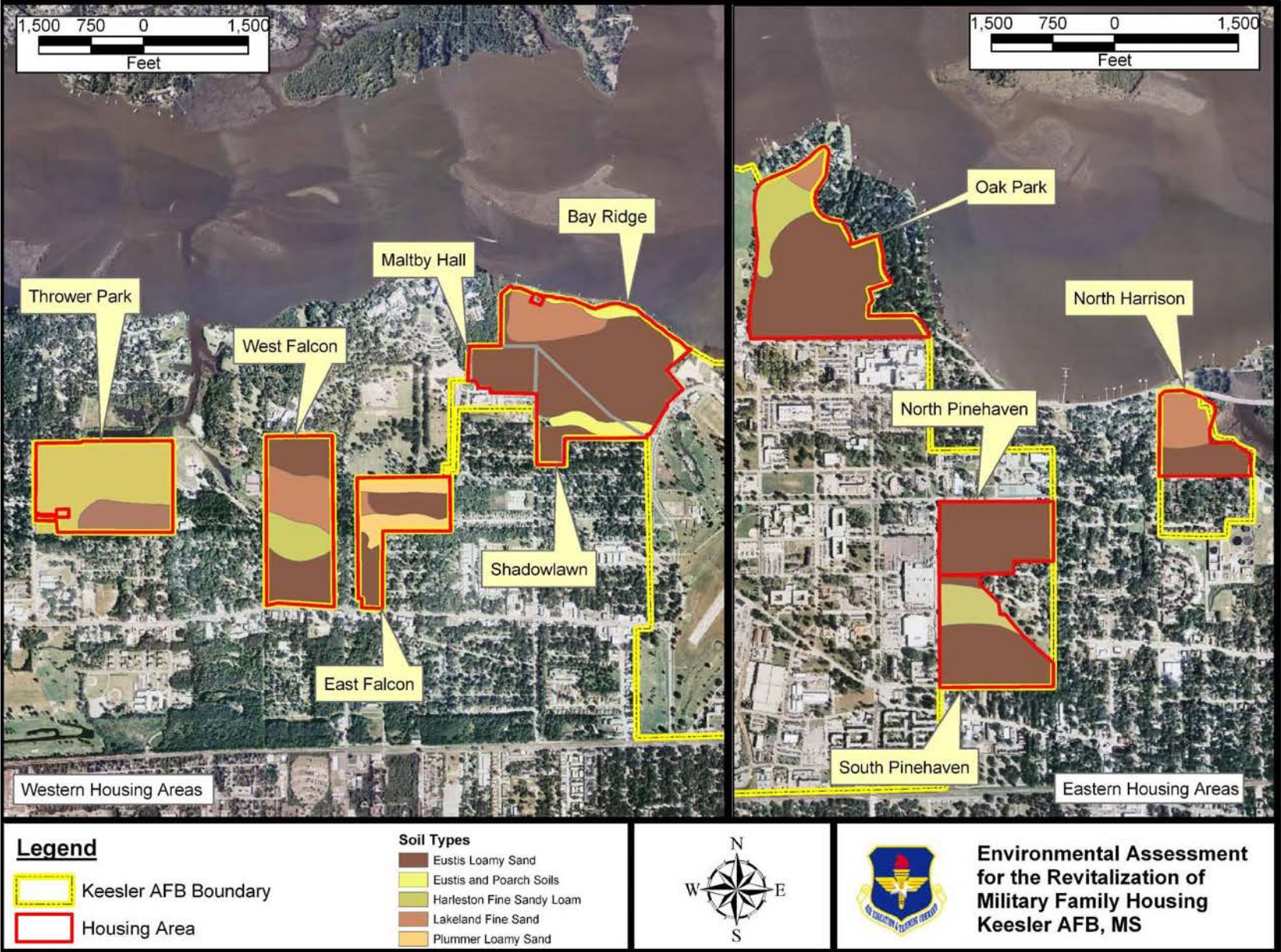


Figure 3-1. Soils Associated With the Proposed Project Areas

### 3.3 WATER RESOURCES

#### 3.3.1 Definition of the Resource

This section provides descriptions of the qualitative and quantitative characteristics of water resources within the study area, which include groundwater, surface waters, floodplains, and wetlands. The ROI for groundwater includes the aquifers beneath the project sites: the Coastal Deposits surficial aquifer, Citronelle Aquifer, and Miocene Aquifer (the source of potable water for the base and the surrounding area). The ROI for surface waters and wetlands includes the proposed construction and demolition sites and those areas down-slope that could receive runoff as a result of the Proposed Actions. The ROI for floodplains includes the footprint of construction and demolition activities.

Groundwater consists of water resources located below the surface, and is generally discussed in terms of its distance from the surface, water quality, aquifer or well capacity, recharge rate, and geologic composition. Groundwater is important as a water source for potable water, irrigation, and industrial purposes.

Surface waters include streams, rivers, bays, ponds and lakes. These waters are important to the ecological, recreational, economic, and human health of an area, which can be damaged when water resources are degraded. Stormwater flows, which usually increase in volume and velocity with increases in impervious surfaces such as rooftops and paved areas, have the potential to impact surface water hydrology. This storm water runoff can also carry sediment, nutrients, debris, and many other pollutants into nearby water bodies. The State of Mississippi has developed and retains primacy for surface water quality standards for all waters of the state in accordance with the provisions of the Clean Water Act. The state uses a system that classifies each water body based on its suitability for various purposes. For example, the state classifies the waters of the Back Bay of Biloxi for recreation. Mississippi follows an anti-degradation policy that is intended to protect water quality existing at the time that water quality standards were adopted and to enhance water quality when possible (MDEQ, 2003).

Wetlands are areas of transition between terrestrial and aquatic systems where shallow water covers the land or the water table is usually at, or near, the surface (Cowardin, L. M., et al., 1979). Environmental factors such as morphology, hydrology, water chemistry, soil characteristics, and vegetation contribute to the diversity of wetland community types. The term *wetland* describes marshes, swamps, bogs, and similar areas. Wetland resources are protected under Section 404 of the Clean Water Act (33 United States Code Section 1344), and any work in wetlands requires a Section 404 Permit. Wetlands on federal lands are further protected under



EO 11990 *Protection of Wetlands*, which states “...each federal agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands....”

Floodplains are lowland areas adjacent to surface water bodies (i.e., streams, bays) and periodically covered by water during flooding events. Floodplain vegetation promotes bank stability, filters excess nutrients, pollutants, and sediments from the water, and moderates flooding by absorbing surface water runoff. EO 11988, *Floodplain Management* (1977, 42 Fed. Reg. 26951), requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. Additionally, EO 11988 requires federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains.

Floodplains are identified using Federal Insurance Mapping Agency flood hazard mapping data developed through the National Flood Insurance Program identification and mapping program. Areas identified as located within Special Flood Hazard Areas (SFHA), as determined by Federal Emergency Management Agency (FEMA), are areas that would be inundated by a flood having a 1-percent chance of occurring in any given year. Development may take place within the SFHA as long as the development is compliant with local floodplain management ordinances (which must meet minimum Federal requirements). Within the SFHA, several flood hazard zones correspond to different levels of detailed determination methods and flood insurance requirements. For purposes of the EA, the SFHA designation corresponds to the 100-year floodplain as determined in the FEMA Flood Insurance Study by detailed hydraulic analysis methods. Within this zone, mandatory flood insurance purchase requirements apply (FEMA, 2004).

### 3.3.2 Existing Conditions

#### Groundwater

The three major aquifer systems in the Keesler AFB area include the Coastal Deposits surficial aquifer, the Citronelle Aquifer, and the Miocene Aquifer. Water quality of the surficial aquifer is poor due the presence of decaying organic matter, impacts from human activity, and salt water intrusion. The water table is within three feet of the ground surface. This aquifer is not used as a source of drinking water, but is used locally as a source of irrigation water for lawns. The Citronelle Aquifer is composed of multiple independent aquifers, and its extent has not been clearly delineated in the Keesler AFB area. The Miocene Aquifer, which is the main freshwater source for Keesler AFB and the surrounding area, extends from approximately 20 feet below the surface to over 3,500 feet (U.S. Air Force, 2000).



## Surface Water

Keesler AFB is located on a peninsula between the Back Bay of Biloxi and the Mississippi Sound. No permanent flowing streams occur on the installation, but overland flows discharge to both the Back Bay and the Sound. A small pond extends along a portion of the northern boundary of the Thrower Park Housing area, and one pond is located between the Thrower Park and West Falcon Housing areas. Another pond is located southeast of the Oak Park Housing Area. During storm events, several small tidal creeks near Keesler AFB receive storm water runoff from the base. The two largest, Bayou LaPorte and Keegan Bayou, are located to the west and east of the base, respectively. Between the two bayous are numerous small tidal creeks to which storm water outfalls discharge. The Back Bay of Biloxi is a tidal estuary located along the northern edge of Keesler AFB and receives the majority of the storm water discharged from the base via these storm water outfalls. Bay Ridge Housing and Oak Park Housing border the Back Bay of Biloxi, and Harrison Court Housing borders Keegan Bayou. Figure 3-2 provides a graphical representation of the hydrological features associated with the proposed project areas.

## Wetlands and Floodplains

Coastal tidal salt marshes extend along much of the Back Bay of Biloxi. These marshes are classified as wetlands and thus require special protection. Bayside wetlands are located to the north of Harrison Court, Oak Park, and Bay Ridge housing areas. In the Bay Ridge area, wetlands border the entire northern boundary and extend south into the housing area at the northwest corner.

Flooding is a concern at Keesler AFB. Major portions of the South Pinehaven, Oak Park, and Harrison Court housing areas lie within the 500-year floodplain. Based on existing FEMA mapping data acquired from Keesler AFB, small, undeveloped sections of the northeast edge and southeast corner of Thrower Park lie within the SFHA, although no housing units are affected. A small portion of the northeast corner of Bay Ridge, impacting approximately three housing units, also lies within the SFHA. Several housing units on the north portion of Oak Park are also in the floodplain. Finally, several units in South Pinehaven and North Harrison lie within the SFHA. Figure 3-2 provides a graphical representation of the wetland and floodplain features associated with the proposed project areas, based on existing FEMA mapping data. Acres of wetlands and floodplains based on this data are detailed in Table 3-2. It should be noted that FEMA is currently in the process of updating the SFHA based on impacts from Hurricane Katrina. This data is not yet available; however, Figure 3-3 shows those areas that experienced flooding as a result of Hurricane Katrina.

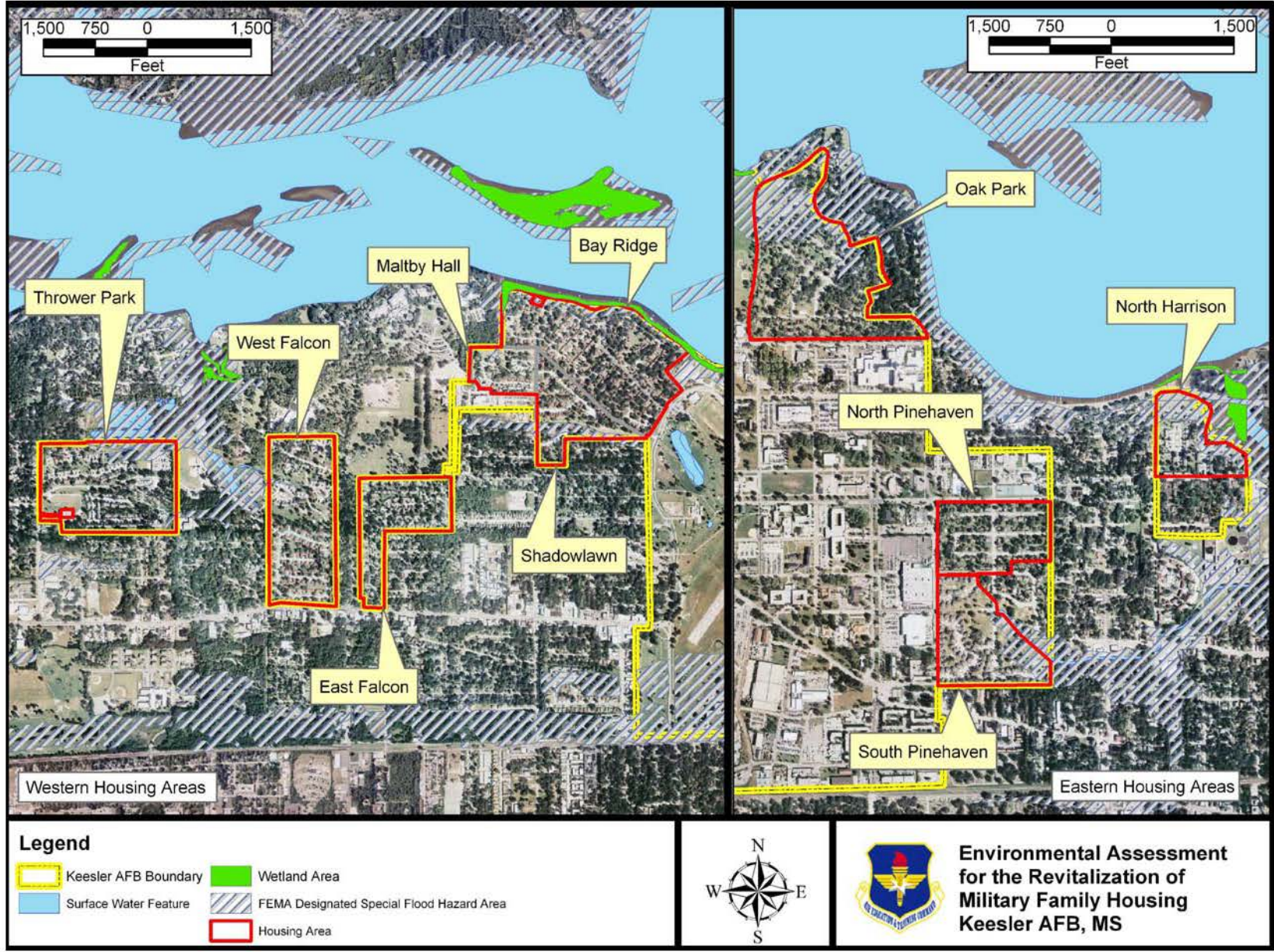
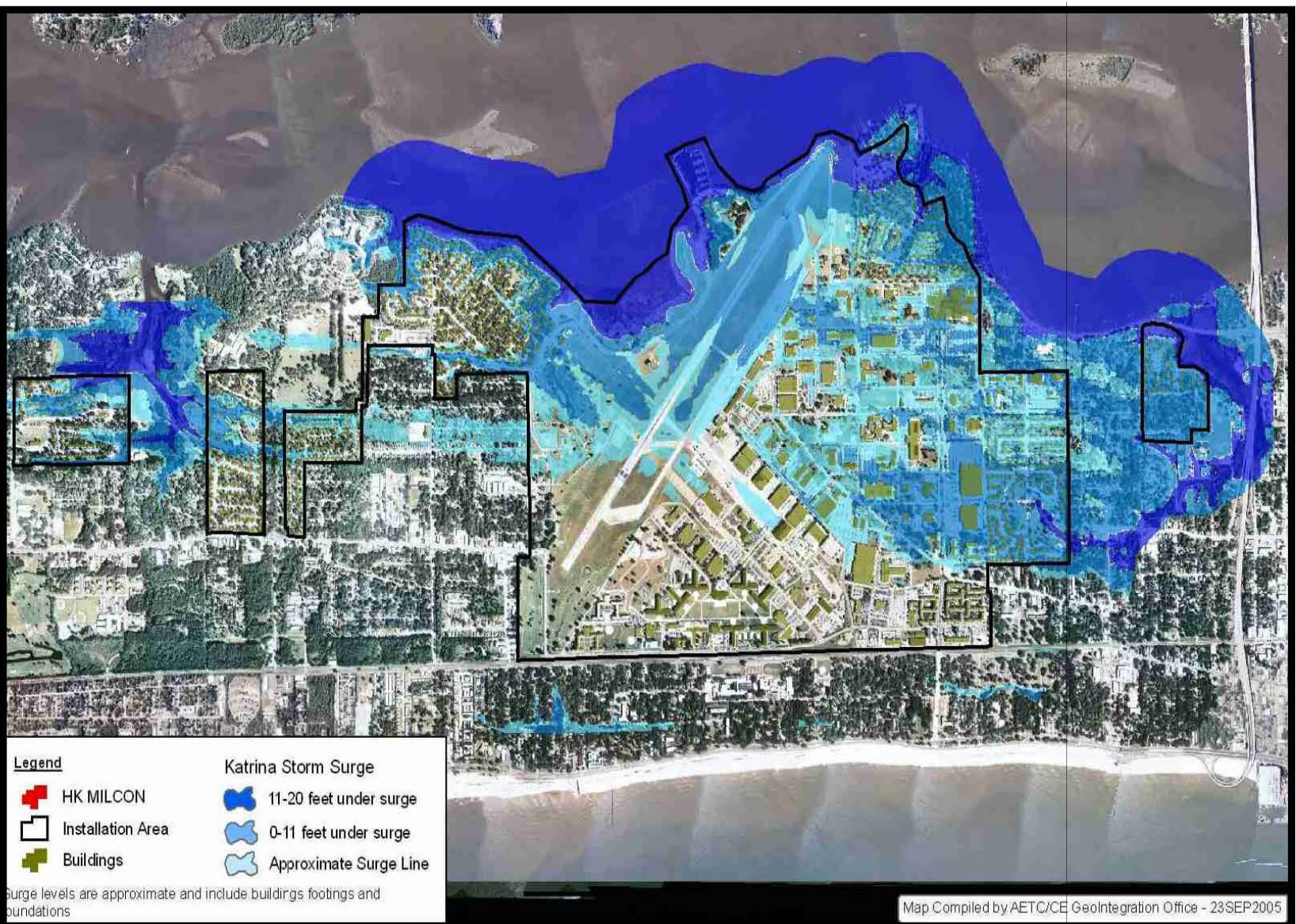


Figure 3-2. Surface Waters, Wetlands, and Floodplains Associated With the Proposed Project Areas





**Figure 3-3. Areas Experiencing Flooding During Hurricane Katrina**

The base experienced flooding problems throughout the base during Hurricanes Georges and Katrina. Due to Hurricane Georges, Pinehaven has been completely reconstructed on higher fill material. The old houses in this area were demolished, and new houses were constructed. The Oak Park area (between Concord and Kensington Streets) contains approximately 10 older houses that were also flooded. The proposed O&M and MILCON projects identified in this document are the result of damages associated with Hurricane Katrina.

**Table 3-2. Approximate Acres of Wetlands and Floodplains Within the Subject Area\***

<b>Housing Area</b>	<b>Wetlands (acres)</b>	<b>Floodplains (acres)</b>
Parcel A – Thrower Park	0	5
Parcel B – West Falcon	0	0.4
Parcel C – East Falcon	0	0
Parcel D – Bay Ridge, Maltby Hall, Shadowlawn	0.85	10.6
Parcel E – Oak Park	0	15.5
Parcel E-1 – Oak Park	0	0
Parcel F – South Pinehaven	0	7.6
Parcel G – North Pinehaven	0	0
Parcel H – North Harrison	0	7.8

\* Calculated utilizing Keesler AFB Geographic Information System (GIS) datalayers and based on existing floodplain data; this is in the process of revision by FEMA.

### 3.4 BIOLOGICAL RESOURCES

#### 3.4.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats, including wetlands, in which they occur. Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic values to society. This section focuses on plant and animal species and vegetation types that typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute.

#### 3.4.2 Existing Conditions

With the exception of the coastal wetlands along the Back Bay of Biloxi, Keesler AFB does not support an abundant variety of natural habitats. The majority of the Base is developed and is occupied by roads and buildings and runways with open areas consisting primarily of mowed lawns or semi-wooded lots between buildings. However, Keesler AFB does support a large number of native trees that occur throughout the installation as scattered individuals and some areas of relatively dense tree cover. Of these, Keesler AFB has designated a large number of live

oaks as “Heritage Trees” through cooperation with the city of Biloxi; these trees are old large flora species that have been set aside for conservation (U.S. Air Force, 2000). A Heritage Tree may not be removed without formal approval from the installation commander and consultation with the city of Biloxi, and are only removed if they have been damaged permanently by lightning or disease.

There are no known state or federally protected plants or animals on Keesler AFB (U.S. Air Force, 2000). The wetlands that border the Back Bay of Biloxi and the aquatic habitats within the Back Bay itself are sensitive resources that are protected by state and federal laws. A complete list of wildlife species that are likely to occur on Keesler AFB can be found in Appendix B.

### **3.5 AIR QUALITY**

This section discusses air quality considerations, standards, and conditions in the area around Keesler AFB in Harrison County, Mississippi.

#### **3.5.1 Definition of the Resource**

Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards. The USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety. The National Ambient Air Quality Standards (NAAQS), established under authority of the Clean Air Act (CAA), represent the maximum allowable atmospheric concentrations for seven “criteria” pollutants, identified in Table 3-3.

In 1997, the USEPA promulgated two new standards: a new 8-hour O<sub>3</sub> standard (which will eventually replace the existing 1-hour O<sub>3</sub> standard) and a new standard for particulate matter less than 2.5 micrometers in diameter (PM<sub>2.5</sub>), which are fine particulates that have not been previously regulated. In addition, the USEPA revised the existing PM<sub>10</sub> standard. The two new standards are scheduled for implementation over the next few years, as monitoring data becomes available to determine the attainment status of areas in the U.S. Meanwhile, the USEPA will enforce the existing 1-hour O<sub>3</sub> standard for areas that are still in nonattainment of the standard.

Table 3-3. National Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Federal Primary NAAQS <sup>1,2,3</sup>	Federal Secondary NAAQS <sup>1,2,4</sup>
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm <sup>5</sup> (10 mg/m <sup>3</sup> ) <sup>6</sup> 35 ppm (40 mg/m <sup>3</sup> )	No standard No standard
Lead (Pb)	Quarterly	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
Nitrogen Dioxide (NO <sub>2</sub> )	Annual	0.053 ppm (100 µg/m <sup>3</sup> ) <sup>7</sup>	0.053 ppm (100 µg/m <sup>3</sup> )
Ozone (O <sub>3</sub> )	1-hour <sup>8</sup> 8-hour <sup>9</sup>	0.12 ppm (235 µg/m <sup>3</sup> ) 0.08 ppm (157 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> ) 0.08 ppm (157 µg/m <sup>3</sup> )
Particulate Matter ≤10 Micrometers (PM <sub>10</sub> )	Annual 24-hour <sup>10</sup>	50 µg/m <sup>3</sup> 150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup> 150 µg/m <sup>3</sup>
Particulate Matter ≤2.5 Micrometers (PM <sub>2.5</sub> )	Annual 24-hour	15 µg/m <sup>3</sup> 65 µg/m <sup>3</sup>	15 µg/m <sup>3</sup> 65 µg/m <sup>3</sup>
Sulfur Dioxide (SO <sub>2</sub> )	Annual 24-hour 3-hour	0.03 ppm (80 µg/m <sup>3</sup> ) 0.14 ppm (365 µg/m <sup>3</sup> ) No standard	No standard No standard 0.50 ppm (1300 µg/m <sup>3</sup> )

Source: 40 CFR Part 51

1. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year.
2. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury; ppm refers to parts per million by volume.
3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
5. ppm = parts per million
6. mg/m<sup>3</sup> = milligrams per cubic meter
7. µg/m<sup>3</sup> = micrograms per cubic meter
8. The ozone one-hour standard still applies to areas that were designated nonattainment when the ozone eight-hour standard was adopted in July 1997. The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1 averaged over a three-year period.
9. The 8-hour ozone standard is attained when the three-year average of the annual fourth-highest daily maximum 8-hour average is not greater than 0.08 ppm.
10. The PM<sub>10</sub> 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

**State Air Quality Standards.** Under the CAA, state and local agencies may establish ambient air quality standards and regulations of their own, provided these are at least as stringent as the federal requirements. The Proposed Action would involve construction, renovation, and demolition projects within Harrison County, Mississippi. For the criteria pollutants of concern, Mississippi standards are the same as the federal standards.

**Prevention of Significant Deterioration.** Section 162 of the CAA further established the goal of prevention of significant deterioration (PSD) of air quality in certain areas. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant (such as national parks). Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system.

**Visibility.** CAA Section 169A established the additional goal of prevention of further visibility impairment in the PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM<sub>10</sub> and SO<sub>2</sub> in the lower atmosphere.

**General Conformity.** CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with the state's implementation plan (SIP) for attainment of the NAAQS.

In 1993, the USEPA issued the final rules for determining air quality conformity. Federal activities must not:

- a) Cause or contribute to any new violation;
- b) Increase the frequency or severity of any existing violation; or
- c) Delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. Conformity does not apply to Keesler AFB because it is in an attainment area.

**Stationary Sources Operating Permits.** Title V of the CAA of 1990 also requires states to issue Federal Operating Permits for major stationary sources. Under the Mississippi Air Pollution Control Law (Regulation APC-S-2 and APC-S-6) a major stationary source in Harrison County is a source as defined in 40 CFR Part 70.2. The purpose of these permitting rules is to establish regulatory control over large, industrial-type activities and to monitor their impact upon air quality.

### 3.5.2 Existing Conditions

#### Climate

The climate of the region is subtropical, with mild winters and warm, moist summers. Average temperatures range from 52 degrees in the winter to 83 degrees in the summer. Average annual precipitation is 61 inches, with July being the wettest month and October the driest. In the autumn and winter, winds are predominantly from the north, and in the spring and summer, they are predominantly from the south. Wind velocity at Keesler AFB averages six miles per hour; however, the maximum wind speed recorded was 130 miles per hour during a hurricane (U.S. Air Force, 2000).

#### Regional Air Quality

The MDEQ monitors all NAAQS pollutants except lead. Lead has been monitored in the past; however, because the concentrations reported were so much lower than the air quality standard and because lead is no longer used in automobile fuels, it was determined by the USEPA and MDEQ that it no longer needed to be monitored in Mississippi (MDEQ, 2005).

Mississippi's statewide air quality-monitoring network is operated by both state and local environmental programs. Ambient air quality data from monitors are used to assess the regions air quality in comparison to the NAAQS. Currently, the state of Mississippi is in attainment for all of the NAAQS and has recently been designated attainment with the new 8-hour ground-level ozone and fine particulate matter (PM<sub>2.5</sub>) standards. Mississippi is one of only three states east of the Mississippi River (Florida and Vermont) that is meeting all of the standards (MDEQ, 2005).



Keesler AFB is the source of many air emissions and holds a Title V Air Permit with MDEQ. These emissions are from sources such as vehicles, aircraft, incinerators, boilers, painting operations, and degreasing operations. Normally, these emissions are dispersed into the atmosphere and cause no problems. The 81<sup>st</sup> Training Wing has partnered with the MDEQ to develop a plan for reducing air contaminant emissions during an air pollution alert warning or emergency. Actions include reduction or cessation of nonessential vehicle trips, engine operation, boiler operation, fire training, painting and corrosion control activities, construction work, research lab incinerator operation, and other electrical and fuel consumption activities (U.S. Air Force, 2000).

### Current Air Emissions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of sources, characterize emissions from each source and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establishes relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as necessity of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy. These inventories include stationary sources and address equipment and processes such as boilers, electric generators, surface coating, and fuel handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

USEPA compiles a nationwide air emission inventory on a three year cycle. The latest finalized available data covers the calendar year 1999 reporting cycle. The 2002 NEI data is available for 2002, but the data has not been finalized from a quality assurance perspective. The NEI data includes emissions from several different sources. These sources include point sources (a stationary source that can be identified by name and location); area sources (a point source whose emissions are too small to track individually, such as a home or small office building, or a diffuse stationary source, such as wildfires or agricultural tilling); and mobile sources (vehicles or equipment with a gasoline or diesel engine; airplanes; or ships). Table 3-4 summarizes the 1999 USEPA NEI emission inventory data for Harrison County, Mississippi.

**Table 3-4. 1999 USEPA National Emissions Inventory for Harrison County**

Source Category	Pollutants (tons/year)				
	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Major Point Sources	3,309	53,794	21,573	822.0	2,125.0
Non-point stationary	9,329	40.0	397.0	8,120.0	5,959.0
On-Road Mobile sources	202	236.0	6,859.0	46,549.0	4,546.0
Non-Road Mobile sources	305	366.0	2,828	20,628	4,871.0
<b>County Totals</b>	<b>13,145</b>	<b>54,436</b>	<b>31,657</b>	<b>75,759.0</b>	<b>17,501</b>

VOC = volatile organic compounds; NO<sub>x</sub> = nitrogen oxides

### 3.6 LAND USE

#### 3.6.1 Definition of the Resource

Land use generally refers to human management and use of land. Specific uses of land typically include residential, commercial, industrial, agricultural, military and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. The primary purpose of land use planning is to guide development of an area in a way that maximizes its effective use, enhances the quality of life it can provide, and protects and preserves the quality of the natural and human environments it contains.

Certain land use designations are particular to military installations and incompatible with residential areas. These include clear zones and accident potential zones. Areas at the end of each runway typically delineate geographic areas around the airfield where historic aircraft mishap data have shown most aircraft accidents occur. Three zones were established based on these accident patterns: the Clear Zone, Accident Potential Zone 1 (APZ I), and Accident Potential Zone 2 (APZ II). The clear zone, the area closest to the runway end, is the most hazardous and must be clear of any development. Some development is allowed in APZs I and II, although this development is usually limited to light industrial, manufacturing, transportation, and similar land uses. However, uses that concentrate people in small areas are not considered acceptable.

Noise is another factor in determining appropriate land uses since elevated sound levels are incompatible with residential areas. Sound levels are typically measured in decibels using Day-Night Average Noise Levels ( $L_{dn}$ ) as the standard of measurement. Numerous studies have shown a relationship between  $L_{dn}$  and the percentage of the population likely to be highly annoyed. These studies have shown that noise levels become geometrically more objectionable as the levels increase. For example, as  $L_{dn}$  increases from 40 to 60, the percentage of the population highly annoyed is shown to increase from less than 1 percent to about 6 to 7 percent. An additional increase from  $L_{dn}$  60 to 65 will increase the percent of people highly annoyed to about 12 to 13 percent, a doubling in the annoyance factor for only a 5-decibel (dBA) increase in noise level. Residential areas are typically inconsistent with noise levels above  $L_{dn}$  65. Table 3-5 summarizes incompatible land uses for residential areas. (Note: Sound levels are discussed in more detailed in Section 3.7, *Noise*).

**Table 3-5. Residential Land Use Compatibility Chart**

$L_{dn}$ NOISE CONTOURS (dBA)				CLEAR	APZ	APZ
65-69	70-74	75-79	80+	ZONE	I	II
No *	No *	No	No	No	No	No

\* Unless sound attenuation materials are installed.

### 3.6.2 Existing Conditions

#### *On-Base Land Use*

Eleven land use categories (based on function of the activity within the category) have been established for land management at the base within the Keesler AFB General Plan (Table 3-6). The major land uses on Keesler AFB include airfield and aircraft operations and maintenance, industrial, and housing. All MFH areas fall within the *Housing – Accompanied* category.

**Table 3-6. Keesler AFB Land Use Designations**

<b>Land Use Categories</b>	<b>Description</b>
Airfield	Runways, taxiways, aprons
Aircraft Operations and Maintenance	Base operations, control tower, fire station, maintenance hangers, shops
Industrial	Base engineering, maintenance shops, storage, warehousing, utilities
Technical Training	Classrooms buildings
Administrative	Headquarters, education center, law center, security operations
Community	
<i>Commercial</i>	Commissary, exchange, club, dinning hall, recreation center, gym, theater
<i>Service</i>	Education center, post office, chapel, library, child care center
Medical	Hospital, clinic
Housing	
<i>Accompanied</i>	Family housing
<i>Unaccompanied</i>	Dormitories, visitor's housing
Outdoor Recreation	Swimming pool, outdoor courts and field, golf course, picnic areas, marina
Open Space/Roads	Conservation area, buffer space, undeveloped land
Water	Lake, pond, major stream

Source: U.S. Air Force, 2004a

On-base, Bay Ridge, Maltby Hall, and Shadowlawn (Parcel D) are bordered on the south by off-base residential development, on the east by recreational land use associated with the Keesler Golf Course, and on the north by the Back Bay of Biloxi. Oak Park (Parcel E) is bordered on the south by medical land uses associated with the Keesler AFB Hospital and on the north by the Back Bay of Biloxi. The Pinehaven subdivisions (Parcels F and G) are bordered on the west by airbase land uses that include community and administrative.

Several plans and programs guide land use planning on Keesler AFB. The Land Use and Transportation component of the Keesler AFB General Plan presents planning strategy to support military missions assigned to the installation. The Plan provides general information regarding the installation and describes existing land uses, a planning analysis of constraints and opportunities, future land use, and implementation guidelines. The General Plan presents factors affecting both on- and off-base land use and includes recommendations to on-base officials and

local community leaders to ensure compatible development. In general, land use recommendations are made for areas affected by the potential for aircraft accidents and aircraft noises, since these areas are considered incompatible with residential use (U.S. Air Force, 2004a).

The Air Installation Compatible Use Zones (AICUZ) program, which delineates noise contours, also promotes compatible development around Air Force installations. An AICUZ study provides installation commanders and local governments with recommendations for land use restrictions. Figure 3-4 depicts noise contours and accident potential zones for the installation based on the most recent AICUZ study data. The designated clear zones at Keesler AFB are located at either end of the runway and the accident potential zones extend beyond the clear zone from the runway end. Currently, some housing units on the western portion of Oak Park (Parcel E) are located within the north Clear Zone and APZ I.

Housing units in this area are also located within the  $L_{dn}$  65-69 and 70-74 dB contours. MFH units at Oak Park located within the clear zone are scheduled to be removed. None of the other MFH areas are located within clear/accident potential zones or affected by elevated sound levels.

### **Off-Base Land Use**

A considerable amount of residential development exists immediately east, west, and south of Keesler AFB. Off-base housing areas, including Thrower Park (Parcel A) and Harrison Court (Parcel H), are primarily surrounded by residential land uses. West and East Falcon subdivisions (Parcels B and C, respectively) are also bordered on the south by commercial development along Pass Road. The Veterans Administration Medical Center is situated immediately to the north of these two MFH areas.

The City of Biloxi Land Development Ordinance, dated September 2003, governs land use in the areas surrounding Keesler AFB (see Figure 3-5). MFH areas located to the west (i.e., Thrower Park, West and East Falcon) are zoned by the city as RS-10, Low Density Single-Family Residential, with an allowable gross density of four to five units per acre. Adjacent non-military residential developments are zoned as either RS-7.5, Medium Density Single-Family Residential (allowable gross density of five to six units per acre), or RM-25, High Density Multi-Family Residential (allowable gross density of 25 units per acre) (Biloxi, 2003).

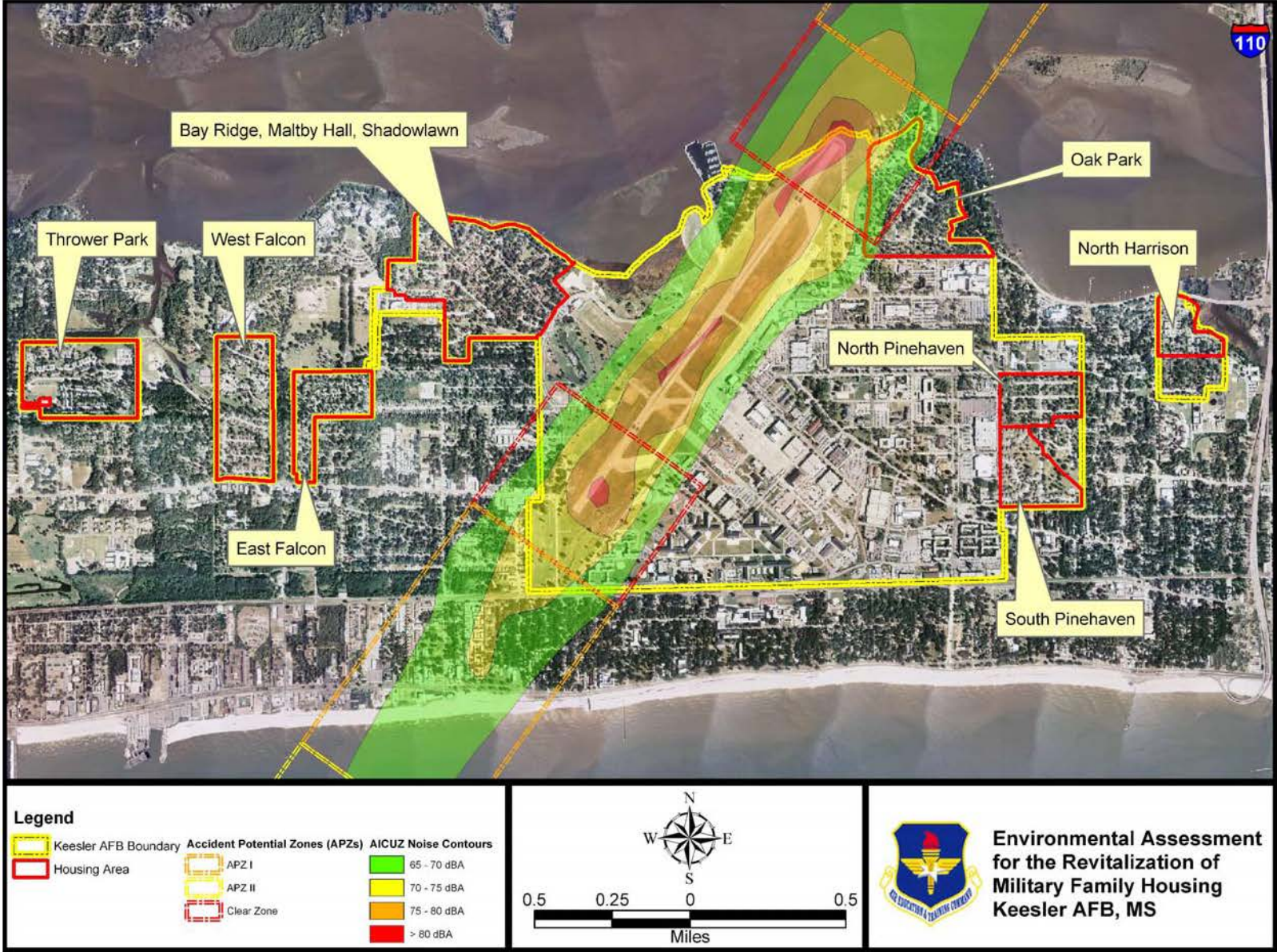


Figure 3-4. Noise Contours and Accident Potential Zones for Keesler AFB



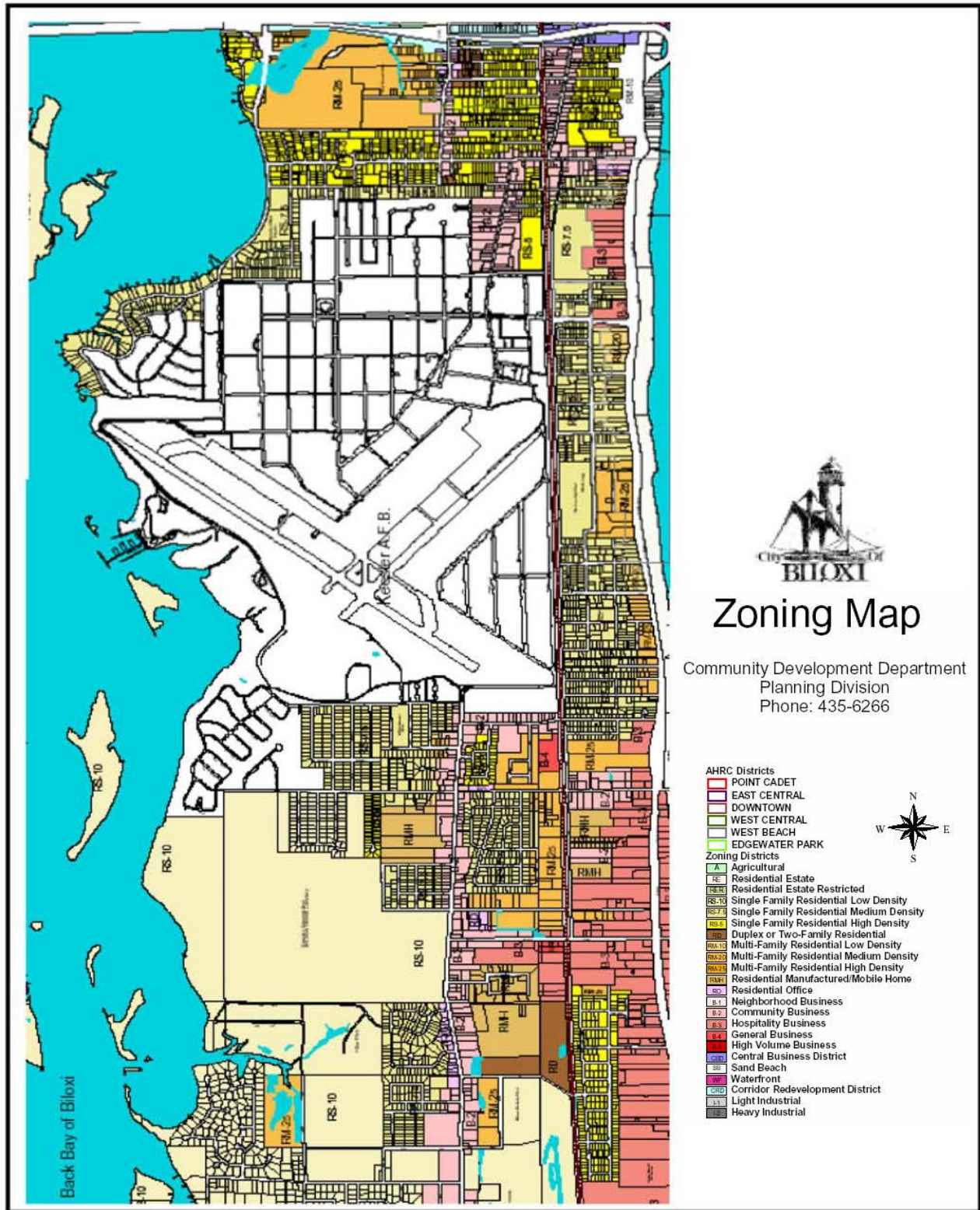


Figure 3-5. Land Use Surrounding Keesler AFB

(Source: Biloxi, 2003)

Areas associated with North Harrison are zoned by the city as RM-25, High Density Multi-Family Residential (allowable gross density of 25 units per acre). Adjacent non-military residential developments are zoned as RS-5, High Density Single-Family Residential (allowable gross density of eight to nine units per acre) (Biloxi, 2003). Land use at the boundary of the military installation is generally compatible and no major conflicts have been identified.

Keesler AFB completed a Joint Land Use Study (JLUS) in 1998 with local jurisdictions. The JLUS is a cooperative effort between the installation and local governments to develop an enforceable airport-compatible land use plan. The city of Biloxi has used the JLUS information and adopted it into the Land Development Ordinance (U.S. Air Force, 2004a).

### **3.7 NOISE**

#### **3.7.1 Definition of the Resource**

Noise, as addressed in this document, is sound that injures, annoys, interrupts, or interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses (e.g., industrial plants or some military training activities). Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flying a specific flight track), or randomly (e.g., military training conducted in a training area). There is wide diversity in responses to noise that vary not only according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal).

Based on numerous sociological surveys and recommendations of federal interagency councils, the most common noise benchmark referred to is an  $L_{dn}$  of 65 A-weighted decibels (dBA). This threshold is often used to determine residential land use compatibility around airports, highways, or other transportation corridors. Two other average noise levels are also useful.

- A Day-Night Average Noise Level of 55 dBA was identified by the USEPA as a level “requisite to protect the public health and welfare with an adequate margin of safety” (USEPA, 1974). Noise may be heard, but there is no risk to public health or welfare.
- A Day-Night Average Noise Level of 75 dBA is a threshold above which effects other than annoyance may occur. It is 10 to 15 dBA below levels at which hearing damage is a known risk (Occupational Safety and Health Administration [OSHA], 1983). However, it is also a level above which some adverse health effects cannot be categorically discounted.

Public annoyance is the most common impact associated with exposure to elevated noise levels. When subjected to Day-Night Average Noise Levels of 65 dBA, approximately 12 percent of persons so exposed will be “highly annoyed” by the noise. At levels below 55 dBA, the percentage of annoyance is correspondingly lower (less than 3 percent). The percentage of people annoyed by noise never drops to zero (some people are always annoyed), but at levels below 55 dBA, it is reduced enough to be essentially negligible (Finegold et al., 1994).

The Day-Night Average Noise Level sums individual noise events and determines the average of the resulting level over a 24-hour period. Thus, it is a metric taking into account the number of noise events that occur as well as the duration and intensity of each event. However, this metric also considers the time of day during which noise events occur. This metric adds 10 decibels to those events that occur between 10:00 PM and 7:00 AM to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the daytime.

### 3.7.2 Existing Conditions

Aircraft operations dominate the background noise environment at Keesler AFB. According to an AICUZ study for Keesler AFB conducted in 1995, the western section of Oak Park (Parcel E) fall within the  $L_{dn}$  65-69 and 70-74 dBA contours associated with aircraft operations (U.S. Air Force, 2004a). These noise contours have been determined through noise modeling in support of the AICUZ program, one function of which is to consider land use near military airfields. See Section 3.6, Land Use, for more discussion on AICUZ.

Noise associated with residential activity also contributes to the existing noise environment. Noise levels are directly related to traffic volumes, speed of traffic, proportion of heavy vehicles (one truck emits the equivalent noise of 28 to 60 cars), population density, existence and effectiveness of noise barriers, and effectiveness of devices such as mufflers and quiet vehicles. Without detailed data regarding all factors listed above, population density may be used to provide an approximation of existing background noise levels for a specific area, as indicated by the following equation:

$$L_{dn} \text{ (dBA)} = 10\text{Log}(\text{Population Density}) + 22, \text{ where 22 is a constant (National Research Council, 1977)}$$

According to the latest available block-level census data, the total population for all MFH areas at Keesler AFB during 2000 was 7,566 individuals (U.S. Census Bureau, 2005). Applying the above equations yields:



Total Population =	7,756
Total Area of MFH, In Acres =	385
Total Area of MFH, In Square Miles =	0.60
Population Density per Square Mile =	12,893
Ldn (dBA) =	$10\text{Log}(12,893) + 22$
Ldn (dBA) =	63.10

As indicated, the average background noise level in Keesler AFB MFH areas was estimated to be  $L_{dn}$  63.10.

### 3.8 HAZARDOUS MATERIALS AND WASTE

#### 3.8.1 Definition of the Resource

Hazardous materials may be defined as any substance that, due to quantity, concentration, physical, chemical, or infectious characteristics, may present a danger to public health, welfare, or the environment. Hazardous materials include flammable and combustible materials, corrosives and oxidizers, compressed gases, and toxic chemicals. Federal laws regarding management of hazardous materials include the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 (4)) and the Emergency Planning and Community Right-to-Know Act (EPCRA) (42 USC § 1001 et seq.) as part of the Superfund Amendments and Reauthorization Act (SARA) Title III (10 USC § 2701 et seq.). Management of hazardous materials in the workplace is regulated under the Occupational Safety and Health Administration (OSHA) regulations, Title 29 CFR 1910.1200. The Air Force regulation for management of hazardous materials is Air Force Instruction (AFI) 32-7086, Hazardous Material Management.

The Resource Conservation and Recovery Act (RCRA) defines hazardous waste as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantive present or potential hazard to human health or the environment. In addition, hazardous wastes must meet either a hazardous characteristic of ignitability, corrosivity, toxicity, or of reactivity under 40 CFR 261, or be listed as a waste under 40 CFR 261. Solid wastes are wastes which do not meet the requirement for hazardous waste and whose disposal is not regulated under RCRA. Solid wastes are regulated under the Solid Waste Disposal Act (42 USC 3251 et seq.) which established guidelines for solid waste collection, transport, separation, recovery, and disposal systems. RCRA amended this Act by shifting the emphasis from disposal to recycling and reuse of recoverable materials.

Based on an evaluation of existing conditions at Keesler AFB, the following items are relevant to this assessment and are addressed in this section:

- *Hazardous Materials/Waste Management* – Hazardous materials comprise substances that may present substantial danger to human health or the environment, and may include petroleum products/fuels, natural gas, paints, mercury, asbestos, etc. Hazardous wastes are defined as any waste or combination of wastes that pose a hazard to human health or the environment, and may include contaminated petroleum products/fuels, used paints, solvents, and cleaners, etc.
- *Installation Restoration Program (IRP) Sites* – The IRP is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations.
- *Storage Tanks* – Underground storage tanks (UST) and aboveground storage tanks (AST) containing petroleum products.
- *Asbestos Containing Building Materials (ACBM)* – Asbestos is a naturally occurring mineral whose crystals form long, thin fibers and which has been used in the past in the manufacture of a wide range of building materials. Asbestos management at Air Force installations is established in AFI 32-1052, Facility Asbestos Management. AFI 32-1052 incorporates by reference applicable requirements of 29 CFR 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.1101, 40 CFR 61.140, Section 112 of the CAA, and other applicable AFIs and DoD Directives.
- *Lead-Based Paint (LBP)* – LBP is defined as surface paint that contains lead in excess of 1 milligram per square centimeter as measured by X-ray fluorescence (XRF) spectrum analyzer, or 0.5 percent lead by weight. The LBP Poisoning Prevention Act (42 USC § 4821 et seq.), as amended by the Residential LBP Hazard Reduction Act of 1992 (Public Law [P.L.]. 102-550, also known as Title X), requires that LBP hazards in federal housing be identified and eliminated. In 1993, OSHA, under 29 CFR 1926, restricted the permissible exposure limit for general industrial workers to 50 micrograms per cubic centimeter of air, which would include workers in the construction field.
- *Polychlorinated Biphenyls (PCBs)* – PCBs are defined as any chemical substances or combination of substances that contain 50 ppm or more of PCBs. The management of PCB compounds is regulated under the Toxic Substances Control Act (TSCA) 15 USC § 2605 and USEPA implementing regulations at 40 CFR 761, which banned the manufacture and distribution of PCBs, with the exception of PCBs used in enclosed systems.

### 3.8.2 Existing Conditions

#### Hazardous Materials/Waste Management

Residents of MFH areas purchase cleaning supplies and other chemicals for personal use that contain constituents classified as hazardous materials. The use of these chemicals is not tracked by the installation, and the quantity of these materials is unknown. There is no other storage of hazardous materials or petroleum products (other than those in bulk storage tanks) in MFH areas. Petroleum products contained in bulk storage tanks are discussed later in this section. Used oil or other petroleum-based automotive fluids may also be generated as part of “do-it-yourself” vehicle maintenance activities. Residents are advised to turn in motor oils at the Auto Skills Center for disposal.

The management of hazardous materials at Keesler AFB is accomplished in accordance with AFI 32-7086, *Hazardous Materials Management*, which incorporates the requirements of all federal regulations, other AFIs, and DoD Directives for the reduction of hazardous material uses and purchases (U.S. Air Force, 2004b).

Household hazardous waste (HHW) generated by MFH residents is exempted from RCRA regulations. Routine HHWs generated in MFH areas include batteries, fluorescent bulbs, pesticides, and paint-related products. A Family Housing Brochure provided to all incoming residents contains guidance on proper disposal of HHW and advises residents to contact Environmental Flight with help regarding disposal of HHW (U.S. Air Force, 2004c).

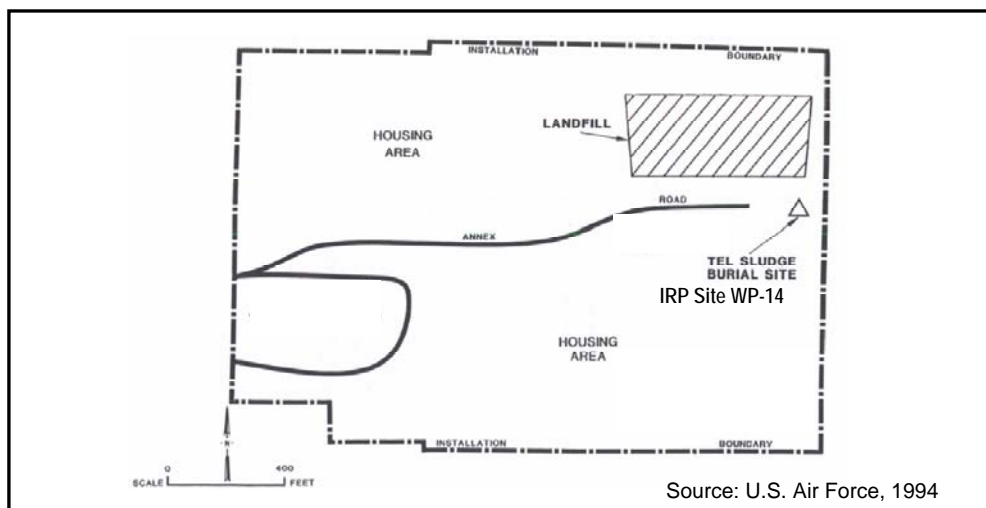
#### Installation Restoration Program

The Air Force uses the IRP to identify, characterize, clean up, and restore sites contaminated with toxic and hazardous substances, low-level radioactive materials, petroleum, oils, lubricants, and other pollutants and contaminants.

Between 1987 and 1995, Keesler AFB was assessed for potential hazardous waste sites, and 24 potential IRP sites were grouped based on their investigative status. Group 1 consisted of 14 IRP sites and included old landfills, waste piles, and UST sites. Eight other sites were placed in Group 2, including locations of petroleum storage tanks used to supply generator fuel to groundwater well pumps (U.S. Air Force, 2005a). There is one Group 1 and three Group 2 IRP sites located on MFH areas. Additionally, there is an abandoned landfill located within one of the areas, as discussed below.

A 1984 Phase I Initial Assessment/Records Search (IA/RS) Report identified the presence of a historical solid waste landfill at Thrower Park (known as LF-05), as shown in Figure 3-6. The

Air Force closed and covered the landfill with soil in the early 1970s. At present, the site has grass growing on the soil cover. A statement of basis concluding that no further action was necessary at this site was approved by the MDEQ and USEPA on May 1997 (U.S. Air Force, 1997). No further action has been approved for the site.



**Figure 3-6. IRP Site and Landfill Located at Thrower Park MFH**

The single Group 1 site, a Tetraethyl Lead (TEL) Sludge Burial Site at Annex 1 (IRP Site WP-14), is located within the Thrower Park (Parcel A) housing area, adjacent to an abandoned landfill (Figure 3-6). The site is approximately 0.5 acre with a gravel surface. A trailer park/camping area is east-southeast of the site (U.S. Air Force, 1999). Based on the results of the remedial investigations, a “no further response action planned” (NFRAP) decision document was prepared for Site WP-14 in May 1999. The decision document recommended no further action (U.S. Air Force, 1999) and was approved by MDEQ and USEPA in July 1999.

There are three Group 2 sites located within, or immediately adjacent to, two of the subject properties. These sites, which are designated as Areas of Concern (AOCs) M, N, and P, were evaluated for potential environmental contamination during 1993 due to the presence, or potential presence, of collocated USTs. The sites were located at East Falcon Park (AOC M), West Falcon Park (AOC N), and Thrower Park (AOC P) (U.S. Air Force, 1997). The 1993 investigation indicated that a UST was never located at AOC N. Consequently, there was no contamination to the soil and/or groundwater from the underground storage of petroleum products—the site poses no threat to human health or the environment (U.S. Air Force, 1997). Table 3-7 summarizes the findings and status for AOC sites at the subject properties.

**Table 3-7. AOCs Located at Subject Properties**

Site	Location	UST Status	Investigative Activities	Findings	Recommendation for Remedy
AOC M	Adjacent to northeast corner of East Falcon Park (Parcel C)	UST removed	Soil sampling	BTEX and/or TPH concentrations below MDEQ UST clean-up standards	No Further Action  Statement of Basis signed by USEPA in May 1997
AOC N	Center portion of West Falcon Park (Parcel B)	No UST history	File review, interviews, metal detector survey, and shovel digs	NA	NA
AOC P	Southwest quadrant of Thrower Park (Parcel A)	UST removed	Soil sampling, groundwater sampling, UST removal	BTEX and/or TPH concentrations below MDEQ UST clean-up standards	No Further Action  Statement of Basis signed by USEPA in May 1997

Source: U.S. Air Force, 1997

UST – Underground Storage Tank; BTEX – Benzene, Toluene, Ethylbenzene, and Xylenes; TPH – Total Petroleum Hydrocarbons; MDEQ – Mississippi Department of Environmental Quality; NA – Not Applicable

### Storage Tanks

There are six ASTs located in MFH areas. These ASTs, which are of steel construction, are used to supply emergency power to sewage lift station generators or to water well pumps located at each site. The ASTs are located within small fenced-in enclosures or within buildings housing the generator or pumps. There are no known reported spills associated with these ASTs. There are no indications of existing USTs located in any housing areas, although USTs were previously located at Thrower Park and East Falcon Park (see Table 3-7).

### Asbestos

Asbestos was widely used in construction/manufacturing in the past because of its insulating properties, its ability to withstand heat and chemical corrosion, and its soft, pliant nature. Friable (brittle) asbestos becomes hazardous when fibers become airborne and are inhaled. Asbestos fibers (<5 microns in size) may become trapped in the lungs and may lead to diseases including asbestosis, lung cancer, and mesothelioma. In 1989, the USEPA prohibited the use of most commercially available asbestos-containing materials used in the United States. Since that time, knowledge of the adverse health effects associated with exposure to airborne asbestos has increased. Asbestos is regulated by the USEPA with the authority promulgated under the

OSHA, 29 USC § 669 et seq. Emissions of asbestos fibers to ambient air are regulated under Section 112 of the CAA.

A comprehensive asbestos survey was completed at Keesler AFB in August 1993. Asbestos-containing building materials (ACBM) were identified in the floor tile and mastic located in the bedrooms, dining rooms, and living rooms of older housing units. It was also identified in the sheetrock joint compound used throughout housing units, as well as in the ceiling of bathrooms and kitchens. Asbestos was also detected in the carport ceiling of housing units of senior officers. These materials were assigned the lowest priority for ACBM, which indicates that the material is nonfriable (cannot be crushed by hand pressure or caused to release airborne fibers from normal usage). Note: Housing units at the Shadowlawn subdivision (located in Parcel D) were renovated in 1999, and all ACBM was removed (Biondi, 2004). A database containing detailed ACBM survey results is maintained by the Environmental Flight (81 CES/CEV).

ACBM is managed in accordance with the installation's *Asbestos Management and Operating Plan* (U.S. Air Force, 2004d). This plan specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACMB abatement projects and is designed to protect installation personnel and residents from exposure to airborne asbestos fibers. The installation manages asbestos in place where possible, removing it only when there is a threat to human health or the environment or when it is in the way of construction or demolition. Removal and disposal of ACMB is carried out in strict compliance with all applicable federal, state, and local laws, rules, regulations, and standards (U.S. Air Force, 2004d).

### **Lead-Based Paint**

LBP was commonly used in and on buildings and other structures until 1978. When in good condition, LBP does not pose a health hazard. However, when it is in a deteriorated condition (cracking, peeling, chipping), or is damaged by renovation or maintenance activities, LBP can release lead-containing particles that pose a threat of lead contamination to the environment and a health hazard to workers and building occupants who may inhale or ingest the particles. Hazards of lead exposure include severe damage to the nervous system, brain, and kidneys in adults and children. In pregnant women, high levels of exposure to lead may cause miscarriage. Children are more sensitive to the effects of lead than adults and may develop blood anemia, kidney damage, colic, muscle weakness, and brain damage, which can potentially cause death, following ingestion of lead particles.

To ensure that any threat to human health and the environment from LBP has been identified, Air Force policy requires that a LBP survey of high-priority facilities be conducted. High-priority facilities include MFH, transient lodging facilities, schools, day care facilities, playgrounds, and other facilities frequented by children under the age of seven. A base wide LBP survey of Keesler AFB buildings, including housing units, was completed in 1993. The survey indicated that LBP was widely used on buildings prior to 1980 (U.S. Air Force, 2005a). LBP was found on bathroom and kitchen walls, doors and baseboards, and exterior painted surfaces. All new MFH residents are provided with a pamphlet that provides information on potential health hazards associated with LBP exposure and guidance on LBP-related questions and issues (U.S. Air Force, 2004c).

The Keesler AFB LBP Management Plan provides specific policy and guidance to identify and address LBP hazards and to protect the public from exposure to these hazards. The plan also provides guidance on proper management/disposal of material containing LBP (U.S. Air Force, 2004e).

## PCBs

PCBs are chemicals that persist in the environment, accumulate in organisms, and concentrate in the food chain. Exposure to PCBs and their by-products have been linked to chloracne (a skin disorder), bleeding and neurological disorders, liver damage, human embryo deformation, cancer, and death. PCB items consist of any containers or equipment that contain PCBs in concentration equal to, or greater than, 50 ppm. The USEPA, under TSCA, regulates the removal and disposal of all PCB items.

Commercial PCBs are used in electrical systems such as transformers, capacitors, and voltage regulators because they are electrically non-conductive and stable at high temperatures. The manufacture of PCBs was banned under the TSCA in 1978, but TSCA does not ban use of PCBs as long as they are completely enclosed, such as in a transformer. Additional requirements under TSCA include an inventory of PCB-containing transformers and proper labeling.

Electric power transformers are located on utility poles in MFH areas. All transformers containing PCBs at Keesler AFB have been removed or retrofitted so as to be PCB-free. There are no records to indicate past spills of PCBs in MFH areas. PCBs may also be contained within the ballasts of older fluorescent light fixtures installed in MFH residences. The installations' master specification instructs housing contractors to properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with Title 40 CFR, Part 261 (40 CFR 261) or MDEQ requirements.

### 3.9 SOLID WASTE

#### 3.9.1 Definition of the Resource

Air Force regulatory requirements and management of solid waste are established by Air Force Policy Directive (AFPD) 32-70, Environmental Quality. AFPD 32-70 requires compliance with applicable federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by AFI 32-7042, which 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan that addresses handling, storage, collection, disposal, and reporting of solid waste. State requirements are covered under Mississippi Regulation SW-2, Nonhazardous Solid Waste Management Regulations & Criteria.

#### 3.9.2 Existing Conditions

Solid waste generated at Keesler AFB is collected by the service contractor (Selrico Services, Inc.) and disposed of at the Pecan Grove Municipal Landfill, located in Pass Christian, Mississippi. Recycling services are performed by the installation under the Qualified Recycling Program. Materials collected include mixed paper, steel/aluminum cans, glass, plastics, and cardboard. Recyclable materials are collected curbside each week and transported to the installation recycling center (Facility 4004) where they are sorted, baled, and stored until they can be transported to an approved recycler (U.S. Air Force, 2004a). C&D waste from the base that requires disposal is transported to the Coastal Recycling Rubbish Site located in north Harrison County. Non-construction/demolition debris or municipal solid waste generated at Keesler AFB is collected by a service contractor and disposed of at the Pecan Grove Municipal Landfill.

Annual totals for C&D and municipal solid waste debris generated at Keesler AFB prior to Hurricane Katrina are provided in Table 3-8, while Table 3-9 reflects solid waste debris facilities servicing Keesler AFB. These facilities also accept C&D debris, although information regarding the amounts of C&D debris accepted at these sites from Keesler AFB is unavailable.

**Table 3-8. Solid Waste Generated/Recycled at Keesler During CY2004**

<b>Waste Type</b>	<b>Waste Generated (Tons)</b>
Solid Waste Landfilled	8,264.6
Solid Waste Composted	537.6
Construction and Demolition Waste Landfilled	471.9
<b>Total Generated (Tons)</b>	<b>9,274.1</b>
Solid Waste Recycled	2,480.9
Construction and Demolition Recycled	1576.3
<b>Total Recycled (Tons)</b>	<b>4,057.2</b>

Source: Morrison, 2005



**Table 3-9. Landfills Accepting Keesler AFB Waste**

Facility	Owner/ Operator	Permitted Acreage	CY04 Waste Received (tons/year)	CY04 Waste Received (tons/day)*	Life Expectancy
Pecan Grove Landfill	Waste Management, Inc.	176	299,153	965	40 years
Coastal Recycling Rubbish Site	C.N. Williams, Inc.	60	25,518	98	47 acres

\* Tons per day calculated using 310 days/year

Source: MDEQ, 2005a

Information on landfill waste received is not yet available. Hurricane Katrina caused catastrophic damage to Mississippi's coast in August 2005. This storm wrought massive destruction of personal and public property resulting in an increase in the amount of C&D debris generated in 2005. However, information regarding the magnitude of this increase and the resulting potential impacts to the life expectancies of the facilities is not available at this time, as local, state, and federal agencies are still in the process of evaluating the impacts of Hurricane Katrina.

At Keesler AFB, municipal solid waste is managed according to the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*. This AFI incorporates by reference the requirements of Subtitle D; 40 CFR Parts 240 through 244, 257, and 258; and other applicable federal regulations, AFIs, and DoD Directives. AFI 32-7042 mandates that installations have a solid waste management program that includes the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention.

### **3.10 INFRASTRUCTURE**

#### **3.10.1 Definition of the Resource**

Resources discussed in this section include transportation facilities on Keesler AFB and the local utility services. During project and site planning, engineers consider the utility specifications that are required as part of the project. Potential modifications and upgrades to existing systems are factored into the planning process. The ROI for this project includes the MFH areas, Keesler AFB, and the surrounding region that may be influenced by changing transportation infrastructure and utility consumption.

### 3.10.2 Existing Conditions

#### Energy

Electricity is supplied to Keesler AFB from Mississippi Power via the Gulfport Power Plant. Keesler AFB distributes this electricity through an underground electrical distribution system. During 2001, Keesler AFB used approximately 166 million kilowatt-hours of electricity, with approximately 26 million kilowatt-hours used for military family housing areas (U.S. Air Force, 2002). Reliant Energy Entex supplies natural gas to Keesler AFB. Gas lines are owned and maintained by Keesler AFB. During 2001, Keesler AFB used approximately 536,557,000 cubic feet of natural gas (U.S. Air Force, 2002).

#### Potable Water

Keesler AFB obtains its drinking water from eight wells located on the base. These wells reach down through 600 feet of sand into unconfined aquifers located in the Miocene system. The Miocene produces soft to moderately hard sodium-bicarbonate water with softness decreasing nearer to the coast. Dissolved solids increase with depth until the water is no longer considered fresh. The wells are permitted by the State of Mississippi, with treatment of the water consisting of fluoridation and chlorination. Each well can pump 500 to 1,000 gallons per minute. The base has the capacity to store up to 2.18 million gallons of water in six water towers. During an average year, over 998,000,000 gallons of water are delivered via the water distribution system at Keesler AFB. Water lines are owned and maintained by Keesler AFB (U.S. Air Force, 2002).

#### Sanitary Sewer System

Harrison County Wastewater District provides wastewater treatment and disposal for the subject properties. The 400,000 linear feet of Keesler AFB-owned and maintained wastewater collection system can accommodate a wastewater flow of approximately 3.24 million gallons per day. Wastewater is pumped to the West Biloxi Sewage Treatment Plant, which provides secondary treatment of the effluent. Effluent from the treatment plant is discharged to the Back Bay of Biloxi (U.S. Air Force, 2004a).

#### Stormwater

Surface runoff is drained through a series of underground storm water lines, culverts, and drainage ditches into Biloxi Back Bay and small bayous associated with the bay. The lines within the housing area are Air Force owned and Keesler AFB maintains them. The Air Force also maintains multiple storm drains and associated inlets and manholes.

## Transportation

According to the Keesler AFB General Plan (U.S. Air Force, 2004a), Keesler's road network consists of approximately 146 miles of roadways. Larcher Boulevard, connecting the main gate and the medical center, is a primary road, with Ploesti Drive carrying traffic from off-base areas to the west. Meadows Drive, leading from Gate 1, is another primary road.

The eastern access points to the base consist of Gate 1 (Meadows Gate) and Gate 2 (Judge Sekul Gate). Gate 3 (Larcher Gate) provides access to the south part of the base, while Gate 7 (Pass Gate) is the west gate. The Meadows, Larcher, and Pass Gates are open 24 hours a day, seven days a week, while the Judge Sekul Gate is only open from 5:30 AM to 6:00 PM on duty days.

The housing areas consist of arterial roadways with minimal side-street parking. Each housing area can be accessed from a number of roadways.

## 3.11 SOCIOECONOMICS

### 3.11.1 Definition of the Resource

Socioeconomic resources within the context of this section are resources pertaining to the local economy and population in the Keesler AFB area. Changes in these two socioeconomic indicators may be accompanied by changes in other areas such as housing availability and the provision of public services. Keesler AFB and the surrounding region are both directly and indirectly affected by each other's economy. Military spending, employment, and demographics impact the economy of local communities. The coordination and planning between Keesler AFB and local communities is important to minimize impacts, reduce stress, and increase economic efficiencies.

The main socioeconomic concerns relate to changes in population, housing, and economic conditions. For this EA, the economic ROI for Keesler AFB is defined as the Biloxi-Gulfport-Pascagoula Metropolitan Statistical Area (MSA). The MSA includes Hancock, Harrison, and Jackson counties in Mississippi, which encompass approximately 1,785 square miles.

### 3.11.2 Existing Conditions

#### *Population*

Since 1990, steady growth has been experienced in Harrison (14.7 percent), Hancock (35.3 percent), and Jackson (14 percent) counties at a rate that has been higher than the overall

growth for the state of Mississippi (10.5 percent). The population estimates for the counties during the 2000 Census were 189,601; 42,967; and 131,420, respectively (U.S. Census Bureau, 2005). Of the 189,601 people who live in Harrison County, 50,644 people live in Biloxi and 71,127 live in Gulfport. The density factor for Harrison, Hancock, and Jackson counties is 326.3 people per square mile, 90.1 people per square mile, and 180.8 people per square mile, respectively. Census block data for Keesler AFB MFH areas indicate that the 2000 population in these areas was 7,566 (U.S. Census Bureau, 2005).

## **Housing**

The damage to housing along Mississippi's Gulf coast from Hurricane Katrina was considerable. According to the Congressional Budget Office, 300,000 homes have been destroyed in the region (Holtz-Eakin, 2005). It is estimated that in Harrison County alone, one-quarter of the housing will need to be rebuilt. That translates into approximately 20,000 new housing units. Additionally, estimates from the city of Biloxi are that at least 20 percent of all structures in the area will have to be reconstructed (Murray, 2005).

Of the 95,000 housing units in Hancock and Harrison Counties, 76 percent were single family. While multifamily represents a smaller percentage of the total stock, the lure of waterside condos and the booming casino market engendered a rise in new apartment and condo projects, the viability of which are, for the present, uncertain (Murray, 2005).

The 2000 Census reported a total of 79,636 housing units in Harrison County, 21,072 units in Hancock County, and 51,678 units in Jackson County with homeownership rates of 62.7 percent, 79.6 percent, and 74.6 percent, respectively. The homeownership rate for the state of Mississippi is 72.3 percent. The average house in Harrison County costs approximately \$87,000, \$92,500 in Hancock County, and \$80,000 in Jackson County (U.S. Census Bureau, 2005).

Inventories of building materials and supplies as well as the distribution systems for these goods were also damaged or destroyed by the hurricane. Preliminary estimates indicate that the cost of rebuilding homes in the region will rise substantially into the first quarter of 2006 due to the shortage of labor and materials. Afterwards, wages and materials price increases will slow as residents return to the region, while immigrants from other regions will be lured by high wages (Holtz-Eakin, 2005).

## **Economy**

Pre-Katrina, the average annual household income in Harrison, Hancock, and Jackson Counties in 1999 was estimated at approximately \$35,600, \$35,200, and \$39,100, respectively. In 2000, the percentage of individuals living below poverty level (as defined by the U.S. Census Bureau)

in Harrison County was estimated at 14.6 percent. The percentage of individuals living below poverty level in Hancock and Jackson counties was reported to be 14.4 and 12.7 percent, respectively (U.S. Census Bureau, 2005).

The strongest sectors of Biloxi's economy are government, seafood, and tourism/gaming, with military personnel making up one-third of the local labor force. Since dockside casino gaming passed referendum in 1992, tourism/gaming has experienced substantial growth in the area (U.S. Air Force, 2004a). However, there is serious concern about Katrina's impact to that state's gambling sector. Estimates of damage to Biloxi's casinos have begun to surface—the storm may have put at least eight of the casinos out of business permanently and caused millions of dollars in damage to the other four. The Biloxi Hard Rock Café hotel and casino, which was set to open 8 September 2005 has sustained damage to 50 percent of its structure. No date has been set as to when the new casino will officially open. The casino barge for Harrah's Grand Casino Biloxi was pushed onshore by the hurricane and washed across U.S. Highway 90. Meanwhile, the president of the Treasure Bay Casino in Biloxi estimates that his casino is a "total loss," with a cost of at least \$100 million to replace it (Murray, 2005).

Other major employers in the Mississippi Gulf Coast area are Keesler AFB, Northrop Grumman Ship Systems, Stennis Space Center, Naval Construction Battalion Center, healthcare centers, and various casinos. Chevron and Dupont are the major industries in the area. Commercial enterprises include mainly casinos and recreational resorts.

### **3.12 CULTURAL RESOURCES**

#### **3.12.1 Definition of the Resource**

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, and American Indian sacred sites and traditional cultural properties. Historic properties (as defined in 36 CFR 60.4) are considered for potential adverse impacts from an action. Historic properties are important archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the NHPA of 1966, as amended, Keesler AFB is required to consider the effects of its undertakings on historic properties listed, or eligible for listing, in the National Register. NHPA obligations to a federal agency are independent from NEPA and must be complied with even when an environmental document is not required. When both are required, Keesler AFB coordinates NEPA compliance with their NHPA responsibilities to ensure that historic properties are given adequate consideration in the preparation of environmental documents such as EAs and EISs. As per AFI

32-7065 Sections 3.3.1 and 3.3.2, and 36 CFR 800.8, Keesler incorporates NHPA Section 106 review into the NEPA process or substitutes the NEPA process for a separate NHPA Section 106 review of alternatives.

On 21 November 1999, the DoD promulgated its American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. The Policy requires that, before decisions are made by the Services, an assessment be made, through consultation, of the effects of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands.

Keesler AFB is also mandated by Section 110 of the NHPA to maintain an active historic preservation program and provide stewardship of cultural resources, “consistent with the preservation of such properties and the mission of the agency (16 USC §470 h-2(a)).” 16 USC §470 h-2(b) also mandates that “[s]uch properties under the jurisdiction or control of the agency as are listed in or may be eligible for the National Register are managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values in compliance with section 106 of this (NHPA) Act.”

### **3.12.2 Existing Conditions**

There are no known archaeological or Native American resources or known potential for such occurrences within the MFH areas at Keesler AFB (U.S. Air Force, 2003). With the exception of the units located at North Pinehaven, the Keesler AFB housing units built during the 1950s were built during the Wherry and Capehart era. For Capehart and Wherry-style housing units, the Air Force, in cooperation with the Department of the Navy, completed consultation with the Advisory Council on Historic Preservation, the National Conference of State Historic Preservation Officers (NCSHPO), and the National Trust for Historic Preservation, addressing Capehart and Wherry housing under 36 CFR §800.14(e). For Capehart and Wherry housing, the consultation allows for the maintenance, repair, layaway, mothballing, privatization, and transfer out of federal agency ownership, substantial alteration through renovation, demolition, and demolition and replacement of Wherry- and Capehart-era housing, associated structures and landscape features that may be eligible for listing on the National Register of Historic Places. Demolition of Keesler’s Wherry and Capehart housing units will not interfere with the Air Force’s commitments under this agreement; therefore, no further consultation or mitigation is required to demolish these housing units.

The North Pinehaven units, due to their age (more than 50 years old) and because they are not components of the Capehart/Wherry consultation agreement, were evaluated for potential eligibility on the National Register in December of 2003 under Section 106 and Section 110 of

the NHPA requirements for a previous action. All the housing structures in the North Pinehaven area were determined to be ineligible for listing on the National Register of Historic Places by the installation due to the lack of architectural integrity (U.S. Air Force, 2003).

### **3.13 SAFETY AND PROTECTION OF CHILDREN**

#### **3.13.1 Definition of the Resource**

This section addresses ground safety associated with activities conducted at Keesler AFB. Ground safety relates to issues associated with human activities and operations and maintenance activities that support unit operations. Specific issues include construction site job safety. This section also addresses protection of children, as required by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children)*.

EO 13045 was issued in 1997 to identify and address issues that affect the protection of children. All federal agencies, the EO declares, must assign a high priority to addressing health and safety risks to children, coordinating research priorities on children's health, and ensuring that their standards take into account special risks to children. The EO states that "...'environmental health risks and safety risks' mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." The ROI for safety and protection of children comprises the Keesler AFB housing areas.

#### **3.13.2 Existing Condition**

Day-to-day construction operations and maintenance activities conducted by staff at Keesler AFB are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. Demolition and construction activities on the installations are required to prepare appropriate job site safety plans, which explain how job safety will be assured throughout the life of the project. Demolition and construction workers are also required to follow applicable OSHA requirements.

Children are more sensitive to some environmental effects than the adult population, such as airborne asbestos and lead paint exposures from demolition, as well as safety issues with regard to equipment and the potential for trips, falls, and traps within structures being demolished, and noise. According to statistics from the 2000 census, 2,104 children under age 18 (or 28 percent of the total base population) live in areas associated with MFH. Approximately 46 percent of the child population (976 children) is five years old or younger (U.S. Census Bureau, 2005).

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## **4. ENVIRONMENTAL CONSEQUENCES**

### **4.1 EARTH RESOURCES**

#### **4.1.1 Methodology**

Protection of unique geologic features, minimization of soil erosion, and siting facilities in relation to potential geologic hazards, soil limitations, and sharp topological features are considered when evaluating impacts to earth resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

The representative geology of the installation is not of concern for the Proposed and Alternative Actions. Thus, analysis for this section focuses on impacts related to soils for the housing areas on Keesler AFB associated with demolition and construction of housing units and infrastructure (roads, underground utilities, etc.).

#### **4.1.2 Impacts**

C&D activities at all locations, under all Alternatives (including the No Action Alternative) would occur on soils and terrain that are not associated with erosion under normal conditions (natural vegetative cover, average rainfall, etc.). However, land disturbance and construction associated with new units and infrastructure would disturb the terrain such that erosion issues associated with potential stormwater runoff outweigh natural soil erosion concerns, especially in areas exhibiting sloping topology. This is more of an issue at Thrower Park, Bay Ridge, and North Harrison due to the proximity of surface waters and wetlands. The proposed construction activities under the Proposed Action and Alternative 1 disturb more than 1 acre of land area, and would therefore require a state-issued NPDES permit and a SWPPP. The NPDES permit and SWPPP conditions would identify required BMPs. Proper implementation of BMPs during construction would offset the potential for erosion impacts.

##### **4.1.2.1 No Action Alternative**

NPDES permit and SWPPP requirements would be required to identify BMPs in order to offset or minimize erosion impacts. Ground disturbance during demolition and construction activities would be temporary, and the Air Force would implement landscaping and vegetative cover to ensure the maintenance of topsoil over the long term. Consequently, impacts to earth resources associated with erosion resulting from demolition of housing units and related infrastructure are expected to be minimal.

#### **4.1.2.2 Proposed Action**

As stated previously, NPDES permit and SWPPP requirements would identify required BMPs in order to offset or minimize erosion impacts. Ground disturbance during demolition and construction activities would be temporary, and the Air Force and developer would implement landscaping and vegetative cover to ensure the maintenance of topsoil over the long term. Consequently, impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure are expected to be minimal.

#### **4.1.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. The same permit requirements and BMPs for erosion control would apply for Alternative 1, thereby minimizing any potential erosion impacts. Therefore, the Air Force expects the impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure under Alternative 1 to be minimal.

#### **4.1.2.4 Alternative 2 (Maximum Development Scenario)**

While Alternative 2 involves the demolition and construction of more units and infrastructure overall than that of the Proposed Action or Alternative 1, the same permit requirements and BMPs for erosion control would apply, thereby minimizing any potential erosion impacts. Therefore, impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure under Alternative 2 are expected to be minimal.

#### **4.1.2.5 Cumulative Impacts**

There are several other ground-disturbing activities either currently underway, or planned over the short-term in the ROI (Section 2.7), as well as the massive recovery effort associated with Hurricane Katrina, which will involve large amounts of demolition and construction throughout the area. It is likely that several thousand acres of soil could be disturbed over the next several years because of the projects throughout the local area. It is also likely that MDEQ will be heavily involved in the recovery efforts to ensure that impacts associated with soil erosion are minimized to the greatest extent practicable. The Air Force would implement appropriate BMPs associated with regulatory requirements as described to minimize potential erosion during construction activities for future projects. Additionally, appropriate vegetation will be reestablished on the sites to ensure rapid soil stabilization. Cumulative impacts to earth resources are expected to be minor. Within the context of the Hurricane Katrina recovery effort,

the Proposed Action or Alternatives are not expected to appreciably contribute to cumulative impacts associated with water quality.

#### **4.1.2.6 BMPs/Coordination**

The potential for impacts to earth resources from housing unit demolition and construction is expected to be minimal. Thus, no mitigations for erosion control would be required. However, this assumes that either the Air Force or developer would implement BMPs as a condition of permitting requirements. The control of on-site erosion, off-site water runoff, and measures to contain sediment are essential components of NPDES permitting and SWPPP requirements. While specific requirements would not be determined until the permitting process is completed, the list of BMPs for controlling erosion during or after construction activities is extensive. A few typical BMPs for soil erosion that are likely to be required include:

- Recondition damaged soils.
- Stabilize slope soils.
- Transport runoff within non-erosive water conveyance systems.
- Intercept and diffuse the erosive energy of runoff at predetermined intervals.
- Transition water flows to non-erosive discharge points.

## **4.2 WATER RESOURCES**

### **4.2.1 Methodology**

Criteria for evaluating impacts related to water resources associated with the proposal are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users, endanger public health or safety by creating or worsening health hazards or safety conditions, or violate laws or regulations adopted to protect or manage water resources.

Water availability impacts are assessed by determining the potential increases in use that may affect availability of water resources. Floodplain and surface water impact analyses were conducted by first identifying floodplain and riparian areas associated with water bodies at Keesler AFB and their proximity to potential development sites (as shown in Figure 3-2). Next, analyses were done using relevant literature to calculate the potential and the extent of all impacts in the affected areas.

#### **4.2.2 Impacts**

Other than a small, short-term increase in population associated with construction workers (as discussed in Section 4.8.2), the Proposed Action and Alternatives do not involve increases in local population. As a result, impacts to local groundwater supply associated with the Proposed Action and Alternatives are not expected.

Siltation from land disturbances and construction activities may adversely impact aquatic systems. Increased freshwater (salinity of <0.5 parts per thousand) from storm events can potentially alter the salinity of surface waters and have adverse consequences on local and migratory fisheries. Stormwater runoff may also introduce additional hydrocarbons (from vehicular traffic) from the construction of new transportation infrastructure. These hydrocarbons can create a chemical imbalance in natural hydrologic systems (USEPA, 1993). Stormwater runoff can also exacerbate nutrient loads from nonpoint sources originating from urban land uses.

The Proposed Action and Alternatives (to include the No Action Alternative) include both demolition and construction activities in the same areas. Neither the Proposed Action nor the Alternatives (to include the No Action Alternative) are within wetland areas, and therefore there will be no direct impact to wetlands. As discussed under the Soils Section (4.1), soils erosion can have an indirect impact on wetlands adjacent to the project areas. However, implementation of NPDES permit and SWPPP required BMPs, as well as maintenance of vegetative buffers, will serve to offset potential indirect impacts to wetlands from soil erosion.

##### **4.2.2.1 No Action Alternative**

Construction and demolition activities under the No Action Alternative (185 and 710 units, respectively) would be much less than that of the Proposed Action (1,067 and 1,588 units, respectively). Therefore, it is reasonable to assume that potential impacts associated with these activities would be much less than those described under the Proposed Action (Section 4.2.2.2). These activities would be temporary, and BMPs would still be required as part of state and federal permitting requirements for erosion control during demolition and construction. The Air Force does not expect any adverse impacts to water resources under this alternative.

##### **4.2.2.2 Proposed Action**

While demolition activities would occur within the 100-year floodplain, there would be no new construction in these areas. Therefore, there would be no adverse impacts to the utility or functionality of floodplain areas. The Air Force would implement BMPs for erosion control as part of NPDES permitting requirements. Based on the estimated gross square footage of area to

be demolished as compared to constructed, there would be an overall decrease in the amount of impervious surface present in the housing areas, thus resulting in an overall decrease in the amount of stormwater associated with the housing areas. However, development and implementation of a Stormwater Management Plan for the housing development project would be required, and the associated stormwater management measures and BMPs would ensure no adverse impacts were associated with stormwater runoff collection and retention. No adverse impacts to surface waters or floodplains are expected.

#### **4.2.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. The issues associated with water resources under Alternative 1 are the same as those described previously under Section 4.2.2 and the Proposed Action. Therefore, the Air Force does not expect adverse impacts to water resources under Alternative 1.

#### **4.2.2.4 Alternative 2 (Maximum Development Scenario)**

Under Alternative 2, there would be an approximate 20-percent increase in the amount of impervious surface throughout the housing areas. The issues associated with water resources under Alternative 2 are the same as those described previously under Section 4.2.2 and the Proposed Action. Although the potential for impacts is slightly higher relative to more development under this alternative, the same BMPs and permitting requirements would apply as those described previously. As a result, the Air Force expects impacts to water resources under Alternative 2 to be minimal.

#### **4.2.2.5 Cumulative Impacts**

Indirect impacts can include increased nutrient loads from urban land uses and their effect on nearby wetlands and surface waters. As natural areas are converted to accommodate new buildings, roads, parking lots, and other impervious surfaces, the volume and speed of stormwater runoff are greatly increased.

Keesler AFB is generally surrounded by commercial and residential development. New development would place increased demands on the local water supply and promote stormwater runoff, leading to water quality degradation. Also, the military would likely redevelop some of the demolition sites with other structures, as well as develop other currently undeveloped areas or redevelop other areas (Section 2.7). Site design plans, safety plans, and permits for new developments would need to address these potential problems so that water resources are

protected. Another concern is the massive recovery effort associated with Hurricane Katrina, which will involve large amounts of demolition and construction throughout the area. It is likely that MDEQ will be heavily involved in the recovery efforts to ensure that impacts to wetlands, floodplains, and water quality are minimized to the greatest extent practicable. Within the context of the Hurricane Katrina recovery effort, the Proposed Action or alternatives are not expected to contribute to cumulative impacts associated with water quality in an appreciable manner.

#### **4.2.2.6 BMPs/Coordination**

The potential for impacts to water resources is expected to be minimal. Thus, no mitigations would be required. However, this assumes that either the Air Force or developer would implement BMPs as a condition of permitting requirements. While specific requirements would not be determined until the permitting process is completed, the list of BMPs for controlling erosion during or after construction activities is extensive. A few typical BMPs that are likely to be required include:

- Installation of entrenched sediment fence (silt fence) and staked hay bales prior to, during, and throughout the entire construction process to prevent fill material and runoff from entering surface waters.
- Inclusion of stormwater features designed to control runoff associated with the additional impervious surface, land clearing, grading, and excavating.
- The design and construction of paved surface areas to incorporate a slope sufficient enough to direct potential runoff away from wetland areas; all drainage improvements and related infrastructure should be designed and constructed in such a manner that the natural hydrologic conditions are not severely altered.
- Restoration of native vegetation and grading of demolition sites as soon as practicable to reduce soil erosion.
- Once design plans are available, performance of a comprehensive MDEQ-approved hydrologic calculation to effectively calculate the volume of stormwater runoff associated with post-construction conditions and allow for proper design and implementation of stormwater management systems.
- Training of all construction personnel regarding proper management techniques.

## 4.3 BIOLOGICAL RESOURCES

### 4.3.1 Methodology

Evaluation of impacts is based upon (1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, (2) the rarity of a species or habitat regionally, (3) the sensitivity of the resource to proposed activities, and (4) the duration and magnitude of ecological ramifications. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species. Sensitive habitats and jurisdictional wetland information was mapped using various hydrologic data, soil types, and vegetative plant communities from the National Wetlands Inventory, USDA Soil Surveys, FEMA, and Keesler AFB (Figures 3-1 and 3-2).

### 4.3.2 Impacts

C&D activities under the Proposed Action and Alternatives (to include the No Action Alternative) would occur within developed, maintained areas with a disturbed landscape.

The AETC Tree Conservation Policy requires that siting decisions for new buildings and additions to buildings retain and incorporate existing trees into landscape designs to the maximum extent possible (U.S. Air Force, 1997a). If trees must be removed to make way for project construction, every attempt must be made to relocate them elsewhere on the installation. In addition, trees designated as “Heritage Trees” by the installation may not be removed without formal approval from the installation commander and consultation with the city of Biloxi. To comply with this policy, trees and shrubs should be retained to the greatest extent possible, and proposed removal of Heritage Trees must be coordinated with 81 CES/CEV. There would be no impacts to vegetation outside the developed regions of the Keesler AFB. Use of BMPs during construction would minimize the potential for adverse effects to vegetation at and near the construction sites.

Since the project area is essentially urban, there would be no or minimal impacts to wildlife with the exception of birds that associate with and nest on or in man-made structures.

The entire scope of the project would take place in locations designated as uplands, and therefore eliminates any wetland permitting issues with the USACE and the MDEQ. Neither the Proposed Action nor the Alternatives (to include the No Action Alternative) are within 100 feet of a wetland area. Studies show that a 100-foot buffer helps control erosion and protect water resources from neighboring land uses and nutrient inputs such as fertilizer, leaking sewage lines, and animal waste (Wenger, 1999).

As stated in Section 3.4.2, there are no federally listed threatened or endangered species or associated habitats at the main base areas of Keesler AFB. The U.S. Fish and Wildlife Service (USFWS) confirmed this through IICEP correspondence as shown in Appendix A.

#### **4.3.2.1 No Action Alternative**

Construction and demolition activities under the No Action Alternative (185 and 710 units, respectively) would be much less than that of the Proposed Action (1,067 and 1,588 units, respectively). Therefore, it is reasonable to assume that potential impacts associated with these activities would be much less than those described under the Proposed Action (Section 4.3.2.2). The Air Force does not expect any adverse impacts to biological resources under this alternative.

#### **4.3.2.2 Proposed Action**

Potential impacts associated with the Proposed Action would be the same as those described in Section 4.3.2. The Air Force does not expect impacts to vegetation or wildlife given the disturbed nature of the project landscape and the requirement for coordination with 81 CES/CEV prior to tree removal.

#### **4.3.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. The issues associated with biological resources under Alternative 1 are the same as those described previously under Section 4.3.2 and the Proposed Action. Therefore, the Air Force does not expect adverse impacts to biological resources under Alternative 1.

#### **4.3.2.4 Alternative 2 (Maximum Development Scenario)**

Potential impacts would be the same as those described under Section 4.3.2 and the Proposed Action. Consequently, the Air Force anticipates no adverse impacts.

#### **4.3.2.5 Cumulative Impacts**

Localized loss of habitat or direct impacts to species can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. However, there would be no net loss of habitat at or around Keesler AFB, as the project would occur within already developed areas of the base. The Proposed Action or Alternatives (to include the No Action Alternative) would not have an incremental effect on the biological resources of Keesler AFB or the local area.



#### **4.3.2.6 BMPs/Coordination**

Impacts to biological resources are not expected. However, trees and shrubs would be retained to the greatest extent possible, and proposed removal of Heritage Trees must be coordinated with 81 CES/CEV.

### **4.4 AIR QUALITY**

#### **4.4.1 Methodology**

Emissions associated with construction activities are the main issues generated by the Proposed Action and Alternatives and will be the focus of the air analysis. Since there is not a defined significance threshold or approach established for evaluating emissions from NEPA projects within an attainment area an approach already established in the General Conformity Rule was used to determine the proposed project's impact on air quality. The General Conformity Rule requirements apply only to federal actions in nonattainment or maintenance areas for the NAAQS. One of the methods of determining whether conformity applies is to determine whether the action's direct and indirect emissions of any criteria pollutant represent 10 percent of a nonattainment or maintenance area's total emissions inventory for that pollutant. Although a conformity determination is not required since Harrison County is designated "attainment," the AP-42 values as well as the U.S. Air Force Air Conformity Applicability Model (ACAM) were used to provide a level of consistency with respect to emissions factors and calculations.

For the analysis of the Proposed Action and Alternatives, a threshold of individual pollutant emissions not exceeding 10 percent of the total Harrison County emissions for each pollutant has been selected as a threshold to determine if there was an adverse impact to air quality.

In addition, a more restrictive regional criteria than required in the General Conformity Rule was used. Rather than comparing emissions from the proposed activities to regional inventories (as required in the General Conformity Rule), emissions were compared to the individual county's most recent finalized National Emissions Inventory (NEI), which represents a smaller area. Specific details regarding the assumptions and calculations associated with the emissions estimates are located in the Air Quality Appendix.

#### **4.4.2 Impacts**

##### **Demolition Emissions**

Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris

loading, and on-site truck traffic to remove debris have been individually developed. The individual calculations for these three events have been summed to develop a recommended PM<sub>10</sub> emissions factor based on the square footage of the demolished area. Details regarding the emissions factor and calculations development can be found in the Air Quality Appendix.

### **Construction Emissions**

Fugitive dust, VOC and NO<sub>x</sub> constitutes the majority of the emissions from construction activities and the project overall. However, construction operations include more than just actual construction of the residential structures. It incorporates grading operations, construction worker trips, stationary equipment (e.g., generators and saws), mobile equipment, residential architectural coatings and acres paved. Certain assumptions were made regarding the amount of acres disturbed and time frame of grading activities. Those assumptions are detailed in Appendix B under the Construction Emissions section.

### **Operations and Maintenance Emissions**

O&M activities associated with the project include housing maintenance, conducted by either the Air Force or a private developer, and general administrative activities (traveling to and from houses and maintenance shops, etc.). These activities would occur over the long-term, as long as the housing units are operations. It is assumed that operations and maintenance activities under all activities would be less than baseline, as there would be less units overall. Emissions associated with these activities would be minor, and are not expected to result in adverse impacts. Installation of air-emitting external combustion stationary sources (such as boilers or gas hot water heaters) would require a New Source Review under the requirements of Keesler AFB's Title V Air Permit.

#### **4.4.2.1 No Action Alternative**

Construction and demolition activities under the No Action Alternative (185 and 710 units, respectively) would be much less than that of the Proposed Action (1,067 and 1,588 units, respectively). Therefore, it is reasonable to assume that air emissions associated with these activities would be much less than those described under the Proposed Action (Section 4.4.2.2). Thus, impacts would be less than for the Proposed Action and no adverse impacts are anticipated.

#### 4.4.2.2 Proposed Action

##### Demolition Emissions

Based on the amount of gross square footage proposed for demolition under the Proposed Action, the estimated PM<sub>10</sub> emissions are approximately 24 tons for the entire project. Details regarding the emissions factor and calculations development can be found in Appendix B.

##### Construction Emissions

Table 4-1 provides a detailed break down of the projects emissions by year, while Table 4-2 provides a summary on the basis of activity.

**Table 4-1. Estimated Annual Project Emissions for the Proposed Action**

Project Year	CO	No <sub>x</sub>	SO <sub>2</sub>	VOC	PM <sub>10</sub>
1	77.72	28.82	3.12	9.5	302.28
2	150.03	38.70	4.33	16.95	3.14
3	150.03	38.70	4.33	16.95	3.14
4	150.03	38.70	4.33	16.95	3.14
5	150.03	38.70	4.33	16.95	3.14
<b>Totals</b>	<b>677.84</b>	<b>183.02</b>	<b>20.44</b>	<b>76.10</b>	<b>314.84</b>
<i>Percentage of County Emissions</i>	<i>.89%</i>	<i>.58%</i>	<i>.04%</i>	<i>.43%</i>	<i>2.40%</i>

**Table 4-2. Estimated Project Construction Emissions by Activity for the Proposed Action**

Source Category		Emissions (Tons/Yr)				
		CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	PM <sub>10</sub>
<b>Life of Project</b>	<b>Grading Equipment</b>	2.5	9.42	0.96	1.00	0.77
	<b>Grading Operations</b>	0.00	0.00	0.00	0.00	276.19
	<b>Acres Paved</b>	0.00	0.00	0.00	.04	0.00
	<b>Mobile Equipment</b>	64.10	152.82	18.90	13.96	12.33
	<b>Arch. Coatings</b>	0.00	0.00	0.00	129.00	0.00
	<b>Stationary Equipment</b>	434.56	11.25	0.58	16.25	.32
	<b>Workers Trips</b>	176.68	9.53	0.00	9.60	1.49
	<b>Totals</b>	<b>677.84</b>	<b>183.02</b>	<b>20.44</b>	<b>76.1</b>	<b>291.1</b>

The highest pollutant percentage associated with construction for the entire project is PM<sub>10</sub>, which is approximately 2.4 percent of Harrison County's total PM<sub>10</sub> emissions based on the 1999 USEPA NEI emissions data for Harrison County. Certain assumptions were made regarding the amount of acres disturbed and time frame of grading activities. Those assumptions are detailed in Appendix B under the Construction Emissions section.

### Summary

When combined, the individual pollutant emissions from demolition and construction activities associated with the entire project will not exceed 10 percent of the total Harrison County emissions for one calendar year for each corresponding pollutant. Consequently, the emissions associated with this Alternative would be less than the established criteria and would not adversely impact air quality.

#### 4.4.2.3 Alternative 1 (Immediate Privatization Alternative)

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. Therefore, overall emissions estimates do not change from the Proposed Action.

### Summary

When combined, the individual pollutant emissions from demolition and construction activities associated with the entire project will not exceed 10 percent of the total Harrison County emissions for one calendar year for each corresponding pollutant. Consequently, the emissions associated with this alternative would be less than the established criteria and would not adversely impact air quality.

#### 4.4.2.4 Alternative 2 (Maximum Development Scenario)

### Demolition Emissions

Based on the amount of gross square footage proposed for demolition under the Proposed Action, the estimated PM<sub>10</sub> emissions are approximately 23 tons for the entire project. Details regarding emissions factor and calculations development can be found in Appendix B.

### Construction Emissions

Table 4-3 provides a detailed break down of the projects emissions by year, while Table 4-4 provides a summary on the basis of activity.

**Table 4-3. Estimated Annual Project Emissions for Alternative 2**

Project Year	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	PM <sub>10</sub>
1	80.52	28.98	3.12	10.26	302.30
2	155.62	39.02	4.33	18.46	3.19
3	155.62	39.02	4.33	18.46	3.19
4	155.62	38.68	4.33	17.77	3.19
5	155.62	38.68	4.33	17.77	3.19
<b>Totals</b>	703.0	184.38	20.44	82.72	315.06
<b>Harrison County</b>	75,759	31,657	54,436	17,501	13,145
<i>Percentage of County Emissions</i>	<i>.93</i>	<i>.58</i>	<i>.04</i>	<i>.47</i>	<i>2.4</i>

**Table 4-4. Estimated Project Construction Emissions by Activity for Alternative 2**

Source Category		Emissions (Tons/Yr)				
		CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	PM <sub>10</sub>
<b>Life of Project</b>	<b>Grading Equipment</b>	2.5	9.42	.96	1.0	.77
	<b>Grading Operations</b>	0.00	0.00	0.00	0.00	276.19
	<b>Acres Paved</b>	0.00	0.00	0.00	.05	0.00
	<b>Mobile Equipment</b>	64.10	152.82	18.9	13.96	12.33
	<b>Arch. Coatings</b>	0.00	0.00	0.00	40.51	0.00
	<b>Stationary Equipment</b>	435.56	11.25	.58	16.25	.32
	<b>Workers Trips</b>	201.84	10.89		10.95	1.71
	<b>Totals</b>	703	184.38	20.44	82.72	291.32

The highest pollutant percentage associated with construction for the entire project is PM<sub>10</sub>, which is approximately 2.4 percent of Harrison County's total PM<sub>10</sub> emissions based on the USEPA 1999 NEI emissions data for Harrison County. Certain assumptions were made regarding the amount of acres disturbed and time frame of grading activities. Those assumptions are detailed in Appendix B under the Construction Emissions section.

### Summary

When combined, the individual pollutant emissions from demolition and construction activities associated with the project will not exceed 10 percent of the total Harrison County emissions for each corresponding pollutant. Consequently, the emissions associated with this alternative would be less than the established criteria and would not adversely impact air quality.

#### 4.4.2.5 Cumulative Impacts

The project would incrementally contribute air pollution emissions during construction and demolition. This contribution would relate to regional air quality goals and attainment standards,

but the contribution from the project would be negligible. Air emissions associated with the project represent only a small percentage of Harrison County's annual emissions, and would be intermittent and temporary. Project emissions would not contribute to other county emissions in any appreciable manner.

#### **4.4.2.6 BMPs/Coordination**

PM<sub>10</sub> emissions are approximately 17 percent of the total emissions portfolio. As previously indicated, grading activities associated with the construction phase create the majority of those emissions. However, the emissions produced would be on a temporary basis and create an elevated short-term PM<sub>10</sub> concentration, which would fall off rapidly with distance from the source. Therefore, it would not be anticipated that the effects to overall air quality would be adverse. In order to mitigate the potential impact to air quality and in accordance with MDEQ Rule APC-S-1 Section 3(a), reasonable precautions will be taken to reduce emission of unconfined particulate matter. These include:

- Paving and maintenance of roads, parking areas, and yards.
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of asphalt, water, oil, chemicals, or other dust suppressants to unpaved roads, yards, open stock piles, and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture, and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

## **4.5 LAND USE**

### **4.5.1 Methodology**

Land use impacts can result if an action displaces an existing use or reduces the suitability of an area for its current, designated, or formally planned use. In addition, a proposed activity may be incompatible with local plans and regulations that provide for orderly development to protect the

general welfare of the public, or may conflict with management objectives of a federal or state agency of an affected area. Compatible land use development would need to comply with federal and state environmental laws and regulations.

#### **4.5.2 Impacts**

Implementation of the Proposed Action or Alternative Actions would be compatible with the future land use planning designations for the housing areas as identified in the Keesler AFB General Plan (U.S. Air Force, 2004a) and the City of Biloxi Land Development Ordinance. The project locations are designated as residential housing areas and, with the exception of three housing areas, would remain as such after completion of the project. Off-base housing areas would continue to fall within established city of Biloxi housing density limits.

Noise levels from existing aircraft operations in the vicinity of the proposed projects would not change and would continue to dominate the average noise levels experienced over a typical 24-hour period surrounding the airfield. Currently, some housing units on the western portion of Oak Park (Parcel E) are situated within the 65-69 and 70-74 dBA contours of the Keesler AFB AICUZ. These units are scheduled to be removed, and none of the other MFH areas would be affected by elevated (i.e., greater than 65 dBA) aircraft noise levels.

##### **4.5.2.1 No Action Alternative**

No adverse impacts to land use are anticipated under the No Action Alternative. All activities would occur within existing housing areas. With the exception of Oak Park and North Harrison, all other housing areas would remain classified as residential. It is unknown at this time how Keesler would use the Oak Park or North Harrison areas. However, provided the Air Force does not utilize these areas for industrial or commercial purposes, there would be no adverse impact associated with incompatible land use.

##### **4.5.2.2 Proposed Action**

All activities would occur within existing housing areas. With the exception of North Harrison and the North and South Pinehaven locations, the housing areas would remain classified as residential areas, and the land use classifications of the surrounding areas would not change. It is unknown at this time how Keesler would use the North Harrison area; the Air Force planned to utilize the Pinehaven locations for dormitory construction and a new entrance gate. These projects would not result in incompatible land uses. Additionally, the Air Force would remove all housing units within the Clear Zone of the northeast end of the airfield at Oak Park. This would result in a beneficial safety/AICUZ impact. No adverse impacts would occur.

#### **4.5.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action. Impacts to land use would be the same as described under the Proposed Action. In addition, the Air Force would remove all housing units within the Clear Zone of the northeast end of the airfield at Oak Park, resulting in a beneficial safety/AICUZ impact. No adverse impacts would occur.

#### **4.5.2.4 Alternative 2 (Maximum Development Scenario)**

Impacts to land use would be the same as described under the Proposed Action. Additionally, the Air Force would remove all housing units within the Clear Zone of the northeast end of the airfield at Oak Park. This would result in a beneficial safety/AICUZ impact. No adverse impacts would occur.

#### **4.5.2.5 Cumulative Impacts**

There would be no land use changes as a result of this proposal that would incrementally contribute to the changing character of the area. As a result, cumulative impacts associated with land use and planning are not expected as a result of this action.

#### **4.5.2.6 BMPs/Coordination**

Impacts associated with land use changes would not occur; therefore BMPs/coordination would not be required.

### **4.6 NOISE**

#### **4.6.1 Methodology**

Noise impact analyses typically evaluate potential changes to existing noise environments resulting from proposed construction and demolition activities. This consists of changes in noise levels or the exposed human population, as well as noise impacts on wildlife. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels).



#### 4.6.2 Impacts

Noise levels from existing aircraft operations in the vicinity of the proposed projects would not change and would continue to dominate the average noise levels experienced over a typical 24-hour period surrounding the airfield. As identified in Section 3.7.2 and 4.5.2, Land Use, portions of the Oak Park housing area are between the 65-75 dBA aircraft noise contours as defined in the Keesler AFB AICUZ. These units are scheduled to be removed, and none of the other MFH areas would be affected by elevated (i.e., greater than 65 dBA) sound levels.

Development would occur over a multi-year period and at any one time C&D projects at multiple locations would be ongoing simultaneously. Therefore, noise associated with active construction sites would be expected to be intermittent and transitory over time. Primary sources of noise during C&D activities would be truck and vehicle traffic, heavy earth moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on-site. Table 4-5 presents anticipated noise levels at selected distances from typical equipment operating at a construction site. Noise levels at a distance of 50 feet range from 75 to 89 dBA and from 66 to 79 dBA at 200 feet. At 500 feet this range decreases to 59 to 73 dBA.

**Table 4-5. Noise Levels for Typical Heavy Equipment**

<b>Equipment Type</b>	<b>Noise Levels, (dBA) 50 feet</b>	<b>Noise Levels, (dBA) 200 feet</b>	<b>Noise Levels, (dBA) 500 feet</b>
Bulldozer	88	76	68
Backhoe (rubber tires)	80	73	65
Front loader (rubber tires)	80	72	64
Dump Truck	75	67	59
Concrete Truck	75	66	59
Concrete Finisher	80	71	64
Crane	75	67	59
Flat-bed Truck (18 wheels)	75	66	59
Scraper	89	80	73
Trencher	85	70	70

Source: American Industrial Hygiene Association, 1986

##### 4.6.2.1 No Action Alternative

Vehicles and equipment involved in demolition and construction work would generate the primary noise under the No Action Alternative. On-base and off-base residents and installation personnel within and surrounding the demolition areas would be exposed to noise from these development activities. Off-base housing, including Thrower Park and Harrison Court, are

primarily surrounded by residential areas. On-base, Bay Ridge, Maltby Hall, and Shadowlawn are bordered on the south by off-base residential development, while Oak Park is bordered on the south by the Keesler AFB Hospital. Pinehaven is bordered on the west by airbase land uses that include commercial and administrative.

Construction workers potentially exposed to elevated noise levels would comply with all hearing protective requirements specified by OSHA. Outside the immediate construction area, noise experienced on a day-to-day basis would depend on the specific activity underway and its proximity to the site edge. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, and personnel may experience interruptions when talking while equipment is operating, since normal speech is about 65 dBA at a distance of 3 feet. Noise levels for operating equipment in Table 4-5 are generally higher within 200 feet, and would be louder than ordinary speech. The resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent over several years, and not result in long-term impacts. Construction activities would be expected to occur between 7:30 AM and 4:30 PM; therefore, most individual's sleeping hours would not be affected.

#### **4.6.2.2 Proposed Action**

Noise associated with demolition and construction activities would be similar to that described previously, although more widespread C&D would take place across most of the housing areas; thus, more people would be exposed to noise from these activities. However, as with the No Action Alternative, the resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent over several years, and not result in long-term impacts. Due to the aggressive schedule for completion of the housing units, demolition and construction activities may occur outside normal working hours of 7:30 AM and 4:30 PM. Consequently, some individuals may be annoyed by these activities. If activities occur after 10:00 PM then individual sleeping hours would be affected.

Under the Proposed Action, there would be a net of 1,067 housing units at the end of the project, comprised of a mix of two- to five-bedroom units. The associated housing population would be approximately 4,483 individuals, with a resulting background noise level of 61.7 dBA. (Note: Section 3.7, Noise, details the methodology used to estimate population density and background noise levels.) Overall, noise impacts associated with this Alternative are expected to be minimal, since estimated levels during all phases are similar to those levels associated with urban or suburban residential communities.

#### **4.6.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. C&D noise for this alternative would be essentially the same as the Proposed Action for the average noise created. The resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent and not result in long-term impacts. As with the Proposed Action, demolition and construction activities may occur outside normal working hours of 7:30 AM and 4:30 PM. Consequently, some individuals may be annoyed by these activities. If activities occur after 10:00 PM then individual sleeping hours would be affected.

#### **4.6.2.4 Alternative 2 (Maximum Development Scenario)**

C&D noise for this alternative would be essentially the same as the Proposed Action for the average noise created, possibly inconveniencing or annoying some residents, but it would be temporary and intermittent and not result in long-term impacts. Similar to the Proposed Action, demolition and construction activities may occur outside normal working hours of 7:30 AM and 4:30 PM. Consequently, some individuals may be annoyed by these activities. If activities occur after 10:00 PM then individual sleeping hours would be affected.

Housing population and sound levels associated with the increased number of residential units under Alternative 1 would be approximately 5,359 individuals and 62.5 dBA, respectively. This level of noise, though slightly higher than the Proposed Action, does not represent a substantial increase. Overall, noise impacts associated with this Alternative are expected to be minimal. Estimated levels during all phases are similar to those levels associated with urban or suburban residential communities.

#### **4.6.2.5 Cumulative Impacts**

No adverse noise impacts have been identified with respect to the implementation of the Proposed Action or Alternatives. Noise associated with C&D activities would be short-term and would cease upon project completion. Noise associated with residential activities would stay relatively unchanged. From a cumulative aspect, demolition and construction activities associated with Hurricane Katrina recovery efforts are likely to occur at the same time as the proposed project. Consequently, additive noise effects are likely to occur. It is assumed that most of the construction and demolition activities would occur during normal work hours. Persons on a normal work schedule (7:30 AM to 4:30 PM) may experience minor annoyances. However, those persons on shift work that sleep during the day may find the additive noise excessive.

#### **4.6.2.6 BMPs/Coordination**

Noise impacts would be temporary, intermittent, and minor. BMPs that would further minimize the potential for annoyance during C&D activities include the following.

- Conduct demolition and construction activities between 7:30 AM and 4:30 PM.
- As is practicable, no demolition or construction activities on weekends or holidays.

### **4.7 HAZARDOUS MATERIALS AND WASTE**

#### **4.7.1 Methodology**

Potential impacts related to hazardous materials and solid and hazardous wastes were considered based on the following criteria:

- Generation of solid and hazardous waste types or quantities that could not be accommodated by the current management system;
- Result in an increased likelihood of an uncontrolled release of hazardous materials that could contaminate soil, surface water, groundwater, or air;
- Potential for adverse health and safety impacts from the presence of ACBM and LBP in housing units; and
- Potential for ground-disturbing activities to impact Environmental Restoration Program (ERP) sites, as well as the potential for residential exposure if housing areas are placed in close proximity to these sites.

#### **4.7.2 Impacts**

##### **Hazardous Materials and Hazardous Waste Management**

New MFH units would be constructed utilizing normal residential construction methods, which would limit the use, to the extent possible, of hazardous materials. POL products and other hazardous materials (e.g., paints) would be used during construction/renovation activities. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. All spills and accidental discharges of POLs, hazardous materials, or hazardous waste would be reported.

Keesler AFB has developed emergency response procedures and site specific contingency plans for all hazardous materials and waste storage/generation locations. This information is incorporated into the installation's Hazardous Material (HAZMAT) Emergency Planning and

Response Compliance Plan (typically called the 705 Plan). The installation's HAZMAT Planning Team plays an integral role in the development of the HAZMAT Plan to cover all emergency response contingencies. Applicable spill response procedures are also detailed in the Keesler AFB Hazardous Waste Management Plan (U.S. Air Force, 2001e).

Routine HHW, including batteries, fluorescent bulbs, pesticides, waste paint, pool chemicals, and used oil or other lubricants may be generated in MFH areas. The Air Force provides guidance information on proper disposal of HHW that encourages MFH residents to take their wastes to on-base/off-base collection centers for recycling and disposal. Used oil, filters, and greases may be disposed of at the Auto Skills Center.

Unless otherwise exempted by CERCLA regulations, the USEPA and MDEQ administer RCRA Subtitle C (40 CFR Parts 260 through 270) regulations applicable to the management of hazardous wastes. Hazardous waste must be handled, stored, transported, disposed, or recycled in accordance with these regulations. There would be impacts to hazardous waste management if the federal action resulted in noncompliance with applicable federal and Mississippi regulations or caused waste generation that could not be accommodated by current Keesler AFB waste management capacities.

No impacts from hazardous materials and hazardous wastes are expected, as the Air Force and developers would adhere to respective requirements and there would be no increase in the quantity of hazardous waste generated at Keesler AFB as a result of the Alternatives.

### **Environmental Restoration Program Sites**

There are three IRP sites located within MFH areas. An IRP site located at Thrower Park (Parcel A) is associated with the past disposal of hazardous waste (IRP Site WP-14). The results of a human-health risk assessment (HHRA) for this site determined that no adverse effects are expected from exposure to soil or groundwater. There are also two IRP sites, one located at Thrower Park (Parcel A) and one at East Falcon Park (Parcel C), associated with the location of former USTs. An investigation conducted for these two sites determined that soil/groundwater cleanup levels were not exceeded for any chemicals of concern. The two USTs have been subsequently removed, and the results of the related investigative activities concluded that no further corrective action measures were necessary. Finally, there is a historical solid waste landfill at Thrower Park (Parcel A). Keesler AFB has determined that these sites do not pose a potential for environmental contamination, and no further action has been approved. Decision documents supporting no further action have been approved by the USEPA (Noble, 2005).

There are no land use controls (LUCs), such as restrictions from excavation/construction, associated with the two former UST sites (Noble 2005). Additionally, demolition/construction activities associated with the Proposed Action or Alternatives would not impact IRP Site WP-14, or the solid waste landfill site since these activities would be located to the west on disturbed areas currently occupied by Thrower Park housing units. Should any unusual odor, soil, or groundwater coloring be encountered during activities in any other areas, Environmental Flight would be contacted immediately. No impacts related to IRP issues are anticipated from MFH activities.

### **Asbestos**

Older MFH units at Keesler have been identified as having ACBM. Materials containing ACBM include floor tile, adhesive, window caulk, and roofing material. AFI 32-1052, Facilities Asbestos Management, requires that when safety and budgetary considerations permit, complete removal of asbestos-containing material would be included in military construction program facility projects. Asbestos surveys (taking samples and obtaining analysis by a state-certified laboratory) would be performed prior to demolition to determine the location of all ACBM.

If asbestos is found, the demolition contractor would have to perform any and all asbestos work in accordance with applicable laws. Contractor personnel would have to be trained and certified. Also, the contractor would need to submit an Asbestos Work/Disposal Plan for the demolition. Transport and disposal documentation records, including signed manifests, would also be required. With these management requirements met, there are no anticipated adverse impacts resulting from asbestos contamination from demolition of buildings. ACBM would not be employed for any new constructed units; therefore, there would be beneficial impacts to MFH residents upon the removal of potential exposure to ACBM.

### **Lead-Based Paint**

Materials containing LBP have been found in older housing units. Materials identified as containing LBP include bathroom and kitchen walls, doors and baseboards, and exterior painted surfaces. LBP-containing materials do not have to be treated as hazardous waste as long as these materials are not removed from a structure prior to demolition. Prior to any renovation/demolition activities, Environmental Flight would review all construction project programming documents, designs, and contracts. Projects requiring alteration or demolition of an existing housing structure would require LBP surveys. Project designs would stipulate the appropriate abatement and disposal requirements for LBP. With these management requirements met, there are no anticipated adverse impacts from implementation of the Alternatives resulting from LBP. LBP would not be employed for any new constructed units; therefore, there would be beneficial impacts to MFH residents upon the removal of potential exposure to LBP.

## PCBs

Electric power transformers located on power poles in MFH areas are PCB-free. PCBs may be contained within the ballasts of older fluorescent light fixtures installed in MFH residences. In the event PCBs are discovered, Keesler AFB policy specifies that housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 or MDEQ requirements. No PCB containing materials would be utilized during construction. Therefore, no adverse impacts associated with PCBs would occur.

### 4.7.2.1 No Action Alternative

No adverse impacts associated with hazardous/wastes, ERP sites, ACBM, LBP, and PCBs, and solid wastes are anticipated under the No Action Alternative, as standard operating procedures would be implemented as described in Section 4.7.2.5. Beneficial impacts would result from the removal of asbestos and LBP materials in the older housing units.

### 4.7.2.2 Proposed Action

No adverse impacts associated with hazardous materials/wastes, ERP sites, ACBM, LBP, or PCBs are anticipated under the Proposed Action, as standard operating procedures would be implemented as described in Section 4.7.2.5. Beneficial impacts would result from the removal of ACBM and LBP materials in the older housing units.

### 4.7.2.3 Alternative 1 (Immediate Privatization Alternative)

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. Consequently, as with the Proposed Action, the Air Force anticipates no impacts associated with hazardous materials/wastes, ERP sites, ACBM, LBP, and PCBs, as the Air Force and developer would be required to implement standard operating procedures as described in Section 4.7.2.5. Beneficial impacts would result from the removal of ACBM and LBP materials in the older housing units.

### 4.7.2.4 Alternative 2 (Maximum Development Scenario)

Similar to the No Action, Proposed Action, and Alternative 1, the Air Force does not anticipate adverse impacts associated with hazardous materials/wastes, ERP sites, ACBM, LBP, and PCBs under Alternative 2, as the Air Force and developer would be required to implement standard operating procedures as described in Section 4.7.2.6. Beneficial impacts would result from the removal of ACBM and LBP materials in the older housing units.

#### 4.7.2.5 Cumulative Impacts

No adverse impacts associated with hazardous waste have been identified with respect to the implementation of the Proposed Action or any of the Alternatives. Therefore, these activities would not contribute to any cumulative impacts associated with hazardous materials and/or waste.

#### 4.7.2.6 BMPs/Coordination

The following actions, as part of Keesler AFB standard operating procedures, would be implemented as part of the Alternatives to ensure that there are no impacts related to potential issues discussed above:

- Environmental Flight would be contacted immediately if any unusual odor or soil or groundwater coloring is observed during C&D activities.
- Environmental Flight would review all construction project programming documents, designs, and contracts. Project designs must stipulate appropriate abatement and disposal requirements for ACBM/LBP.
- A certified contractor would be used when removing/disposing of all ACBM.
- In the event PCBs are discovered, they would be turned in to DRMO for proper disposal. Housing contractors would be required to properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 and MDEQ requirements.
- All spills and accidental discharges of POL, hazardous materials, or hazardous waste on Keesler AFB, regardless of the quantity, would be reported to 81 CES/CEV and mitigated.
- The Air Force and developers will coordinate with all local landfill operators prior to demolition or construction activities to minimize any potential impacts associated with disposal of C&D debris.

### 4.8 SOLID WASTE

#### 4.8.1 Methodology

Impact analyses were conducted by estimating the maximum quantity of solid waste, primarily C&D debris, generated from implementation of the Proposed Action and Alternatives. This quantity was compared to the current capacity of available landfills in the region.

#### 4.8.2 Impacts

Solid waste would be generated during C&D of MFH units under the Proposed Action and Alternatives. Non-hazardous solid waste includes household refuse and C&D debris, such as



removed building materials and land clearing debris. The Proposed Action and Alternative 1 may involve a net population increase in the county associated with an influx of construction workers into the area, resulting in a net change in the amount of municipal solid waste (household refuse) generated in the county. However, impacts to landfill capacity from generation of MFH household refuse would be negligible.

Potential impacts to solid waste would primarily be associated with C&D debris generated as a result of residential development activities. Based on sampling studies documented in “Characterization of Building-Related Construction and Demolition Debris in the United States” (Franklin Associates, 1998), it was assumed that 4.4 pounds per square foot (lb/ft<sup>2</sup>) and 3.9 lb/ft<sup>2</sup> would be generated during residential and non-residential construction, respectively. The quantity of debris generated from whole-house renovation and demolition activities were similarly assumed to be 24.1 lb/ft<sup>2</sup> and 111 lb/ft<sup>2</sup>, respectively. Detailed calculations regarding C&D debris generation are presented in Appendix B.

Under the Proposed Action and Alternatives (to include the No Action Alternative), any cut vegetation would not be added to the solid waste stream (dumpsters or roll-offs), but instead would be composted at Keesler AFB. (Note: During 2004, Keesler AFB composted approximately 538 tons of solid waste.) To the greatest extent possible, C&D waste would be recycled, especially wood, scrap metal, and wiring. Where feasible, Keesler AFB may reuse concrete material as rip-rap in spillways to prevent erosion. (Note: During 2004, Keesler AFB diverted/recycled approximately 1,576 tons of C&D debris.)

Coordination between Keesler AFB, waste contractors, developers, and local landfill operators prior to demolition or construction would minimize any potential impacts associated with disposal of C&D debris.

#### 4.8.2.1 No Action Alternative

Under the No Action Alternative, the total amount of debris that would be generated during the demolition of 710 units and the construction of 185 units is shown in Table 4-6. It is unknown when these units would actually be constructed and demolished. For a conservative estimate, it was assumed that C&D activities would take place on a three-year timetable. Detailed information and calculations regarding C&D debris generation is located in Appendix B.

**Table 4-6. Estimated C&D Debris Generated by No Action Alternative**

Project Year	Construction		Demolition		Total Debris (Tons)
	Debris (ft <sup>2</sup> )	Debris (Tons) <sup>a</sup>	Debris (ft <sup>2</sup> )	Debris (Tons)	
1	264,491	557	771,828	27,085	27,642
2	203,140	428	578,871	20,314	20,742
3	203,140	428	578,871	20,314	20,742
<b>Totals</b>	<b>670,771</b>	<b>1,413</b>	<b>1,929,570</b>	<b>67,713</b>	<b>69,126</b>

Over the three-year lifetime of the development project, it is estimated that total quantity of debris generated from C&D activities would be 69,126 tons. The quantity of debris generated under the No Action Alternative was compared to the average annual amount of waste received at regional landfills (Table 4-7). (Note: Recycling by Keesler AFB would reduce the total amount of debris disposed to the landfill.)

**Table 4-7. Estimated Increase in C&D Debris at Local Landfills Under the No Action Alternative**

Project Year	Waste Generated (Tons/year)	Pecan Grove Landfill	Coastal Recycling Rubbish Site	Central Landfill	Pine Belt Regional Landfill	S&S Enterprises, Rubbish Site	Total Capacity
	Received CY 2004	299,153	25,518	125,060	94,087	25,694	<b>569,512</b>
	Received CY 2005 <sup>a</sup>	420,310 <sup>b</sup>	35,853 <sup>b</sup>	182,515	127,000	36,100 <sup>b</sup>	<b>801,778</b>
% of Total Capacity <sup>c</sup>							
1	27,642	6.6	77.1	15.1	21.8	76.6	<b>3.4</b>
2	20,742	4.9	57.9	11.4	16.3	57.5	<b>2.6</b>
3	20,742	4.9	57.9	11.4	16.3	57.5	<b>2.6</b>

<sup>a</sup> Hurricane Katrina devastated the Mississippi coast in August 2005, causing a dramatic increase in the amount of debris being taken to area landfills in 2005.

<sup>b</sup> Information on CY 2005 waste received at these landfills could not be obtained at this time. It was assumed that waste received at these landfills increased by approximately the same percent as Central and Pine Belt Regional Landfills, 45.9 and 35 percent, respectively, for an average increase of 40.5 percent. The average increase of 40.5 percent was used to estimate the amount of waste received at Pecan Grove, Coastal Recycling, and S&S Enterprises landfills during CY 2005.

<sup>c</sup> The percent increase was calculated based on CY 2005 information, including the assumption previously noted.

Note: Recycling of C&D debris would reduce total amounts.

During the peak development year, demolition activities would increase the percent of waste disposed at the Pecan Grove Landfill by approximately 6.6 percent. This would drop to approximately 4.9 percent over the following two years. It is unlikely that all C&D debris would enter only one landfill. Distribution of C&D debris among all available landfills would further minimize the potential for adverse impacts to capacity, reducing the percent of total use to 3.4 percent during Year 1 and 2.6 percent thereafter.

#### **4.8.2.2 Proposed Action**

The Proposed Action involves the construction of 1,067 new housing units and the demolition of 1,588 units. The quantity of C&D debris that would be generated as a result of these activities is estimated as shown in Table 4-8. Detailed calculations regarding C&D debris generation are presented in Appendix B.

**Table 4-8. Estimated C&D Debris Generated by the Proposed Action**

Project Year	Construction		Demolition		Total Debris (Tons)
	Debris (ft <sup>2</sup> )	Debris (Tons) <sup>a</sup>	Debris (ft <sup>2</sup> )	Debris (Tons)	
1	1,508,455	3,173	1,725,741	60,560	63,733
2	1,144,634	2,408	1,296,344	45,491	47,900
3	1,213,602	2,542	1,293,627	45,396	47,938
4	28,400	55	-	-	55
5	20,300	40	-	-	40
<b>Totals</b>	<b>3,915,391</b>	<b>8,218</b>	<b>4,315,712</b>	<b>151,447</b>	<b>159,666</b>

Over the five-year lifetime of the development project, it is estimated that the total quantity of debris generated from construction and demolition activities would be 159,666 tons. The annual quantity of debris generated during construction, renovation, and demolition under the Proposed Action was compared to the average annual amount of waste received at regional landfills that accept C&D waste, as shown in Table 4-9. (Note: Recycling by Keesler AFB would reduce the total amount of debris disposed to the landfill.)

**Table 4-9. Estimated Increase in C&D Debris at Local Landfills Under the Proposed Action**

Project Year	Waste Generated	Pecan Grove Landfill	Coastal Recycling Rubbish Site	Central Landfill	Pine Belt Regional Landfill	S&S Enterprises, Rubbish Site	Total Capacity
	Received CY 2004 (Tons/year)	299,153	25,518	125,060	94,087	25,694	<b>569,512</b>
	Received CY 2005 (Tons/year)	420,310 <sup>a</sup>	35,853 <sup>a</sup>	182,515	127,000	36,100 <sup>a</sup>	<b>801,778</b>
% of Total Capacity <sup>b</sup>							
1	63,733	15.2	177.8	34.9	50.2	176.5	<b>7.9</b>
2	47,900	11.4	133.6	26.2	37.7	132.7	<b>6.0</b>
3	47,938	11.4	133.7	26.3	37.7	132.8	<b>6.0</b>
4	55	0.0	0.2	0.0	0.0	0.2	<b>0.0</b>
5	40	0.0	0.1	0.0	0.0	0.1	<b>0.0</b>

<sup>a</sup> Hurricane Katrina devastated the Mississippi coast in August 2005, causing a dramatic increase in the amount of debris being taken to area landfills in 2005.

<sup>b</sup> Information on CY 2005 waste received at these landfills could not be obtained at this time. It was assumed that waste received at these landfills increased by approximately the same percent as Central and Pine Belt Regional Landfills, 45.9 and 35 percent, respectively, for an average increase of 40.5 percent. The average increase of 40.5 percent was used to estimate the amount of waste received at Pecan Grove, Coastal Recycling, and S&S Enterprises landfills during CY 2005.

<sup>c</sup> The percent increase was calculated based on CY 2005 information, including the assumption previously noted.

Note: Recycling of C&D debris would reduce total amounts.

During the peak development year (Year 1), MFH debris would increase the percent of waste disposed at the primary Keesler AFB landfill, Pecan Grove Landfill, by approximately 15.2 percent. This would drop to approximately 11.4 percent over the next two years. The remaining two years of the project would result in less than a 0.1 percent increase of debris to the Pecan Grove Landfill. It is unlikely that all C&D debris would enter only one landfill. Distribution of C&D debris among all available landfills would further minimize the potential for adverse impacts to capacity, reducing the percent of total use to approximately 7.9 percent during Year 1, 6 percent for the following two years, and less than 0.1 percent thereafter.

#### 4.8.2.3 Alternative 1 (Immediate Privatization Alternative)

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. The estimated quantity of debris that would be generated under Alternative 1 is shown in Table 4-10. Detailed calculations regarding C&D debris generation are presented in Appendix B.

**Table 4-10. Estimated C&D Debris Generated by Alternative 1**

Project Year	Construction		Demolition		Total Debris (Tons)
	Debris (ft <sup>2</sup> )	Debris (Tons) <sup>a</sup>	Debris (ft <sup>2</sup> )	Debris (Tons)	
1	1,565,765	3,287	1,725,741	60,560	63,847
2	604,939	1,268	937,607	32,903	34,170
3	604,185	1,266	937,607	32,903	34,169
4	742,640	1,624	358,737	12,589	14,213
5	724,564	1,585	356,019	12,493	14,078
<b>Totals</b>	<b>4,242,093</b>	<b>9,029</b>	<b>4,315,712</b>	<b>151,448</b>	<b>160,477</b>

Over the five-year lifetime of the development project, it is estimated that total quantity of debris generated from C&D activities would be 160,477 tons. The quantity of debris generated under Alternative 1 was compared to the average annual amount of waste received at regional landfills (Table 4-11). (Note: Recycling by Keesler AFB would reduce the total amount of debris disposed to the landfill.)

**Table 4-11. Estimated Increase in C&D Debris at Local Landfills Under Alternative 1**

Project Year	Waste Generated (Tons/year)	Pecan Grove Landfill	Coastal Recycling Rubbish Site	Central Landfill	Pine Belt Regional Landfill	S&S Enterprises, Rubbish Site	Total Capacity
	Received CY 2004	299,153	25,518	125,060	94,087	25,694	<b>569,512</b>
	Received CY 2005	420,310 <sup>a</sup>	35,853 <sup>a</sup>	182,515	127,000	36,100 <sup>a</sup>	<b>801,778</b>
% of Total Capacity <sup>b</sup>							
1	63,847	15.2	178.1	35.0	50.3	176.9	<b>8.0</b>
2	34,170	8.1	95.3	18.7	26.9	94.7	<b>4.3</b>
3	34,169	8.1	95.3	18.7	26.9	94.7	<b>4.3</b>
4	14,213	3.4	39.6	7.8	11.2	39.4	<b>1.8</b>
5	14,078	3.3	39.3	7.7	11.1	39.0	<b>1.8</b>

<sup>a</sup> Hurricane Katrina devastated the Mississippi coast in August 2005, causing a dramatic increase in the amount of debris being taken to area landfills in 2005.

<sup>b</sup> Information on CY 2005 waste received at these landfills could not be obtained at this time. It was assumed that waste received at these landfills increased by approximately the same percent as Central and Pine Belt Regional Landfills, 45.9 and 35 percent, respectively, for an average increase of 40.5 percent. The average increase of 40.5 percent was used to estimate the amount of waste received at Pecan Grove, Coastal Recycling, and S&S Enterprises landfills during CY 2005.

<sup>c</sup> The percent increase was calculated based on CY 2005 information, including the assumption previously noted.

Note: Recycling of C&D debris would reduce total amounts.

During the peak development year (Year 1), MFH debris would increase the percent of waste disposed at the Pecan Grove Landfill by approximately 15.2 percent. This would drop to approximately 8.1 percent over the next two years and down to 3.4 percent over the final two years. It is unlikely that all C&D debris would enter only one landfill. Distribution of C&D debris among all available landfills would further minimize the potential for adverse impacts to capacity, reducing the percent of total use to approximately 8 percent during Year 1, 4.3 percent for the following two years, and 1.8 percent thereafter.

#### **4.8.2.4 Alternative 2 (Maximum Development Scenario)**

Alternative 2 involves the construction of 1,225 new housing units and the demolition of 1,588 existing units. The estimated quantity of debris that would be generated under Alternative 2 is shown in Table 4-12. Detailed calculations regarding C&D debris generation are presented in Appendix B.

**Table 4-12. Estimated C&D Debris Generated by Alternative 1**

Project Year	Construction		Demolition		Total Debris (Tons)
	Square Feet	Debris (Tons)	Square Feet	Debris (Tons)	
1	1,826,686	3,839	1,725,741	60,560	64,399
2	700,504	1,470	937,607	32,903	34,373
3	699,750	1,468	937,607	32,903	34,371
4	676,860	1,914	358,737	12,589	14,503
5	672,605	1,901	356,019	12,493	14,395
<b>Totals</b>	<b>4,576,405</b>	<b>10,593</b>	<b>4,315,712</b>	<b>151,448</b>	<b>162,040</b>

Over the five-year lifetime of the development project, it is estimated that total quantity of debris generated from C&D activities would be 162,040 tons. The quantity of debris generated under Alternative 2 was compared to the average annual amount of waste received at regional landfills (Table 4-13). (Note: Recycling by Keesler AFB would reduce the total amount of debris disposed to the landfill.)

**Table 4-13. Estimated Increase in C&D Debris at Local Landfills Under Alternative 2**

Project Year	Waste Generated (Tons/year)	Pecan Grove Landfill	Coastal Recycling Rubbish Site	Central Landfill	Pine Belt Regional Landfill	S&S Enterprises, Rubbish Site	Total Capacity
	Received CY 2004	299,153	25,518	125,060	94,087	25,694	<b>569,512</b>
	Received CY 2005	420,310 <sup>a</sup>	35,853 <sup>a</sup>	182,515	127,000	36,100 <sup>a</sup>	<b>801,778</b>
% of Total Capacity <sup>b</sup>							
1	64,399	15.3	179.6	35.3	50.7	178.4	<b>8.0</b>
2	34,373	8.2	95.9	18.8	27.1	95.2	<b>4.3</b>
3	34,371	8.2	95.9	18.8	27.1	95.2	<b>4.3</b>
4	14,503	3.5	40.5	7.9	11.4	40.2	<b>1.8</b>
5	14,395	3.4	40.2	7.9	11.3	39.9	<b>1.8</b>

<sup>a</sup> Hurricane Katrina devastated the Mississippi coast in August 2005, causing a dramatic increase in the amount of debris being taken to area landfills in 2005.

<sup>b</sup> Information on CY 2005 waste received at these landfills could not be obtained at this time. It was assumed that waste received at these landfills increased by approximately the same percent as Central and Pine Belt Regional Landfills, 45.9 and 35 percent, respectively, for an average increase of 40.5 percent. The average increase of 40.5 percent was used to estimate the amount of waste received at Pecan Grove, Coastal Recycling, and S&S Enterprises landfills during CY 2005.

<sup>c</sup> The percent increase was calculated based on CY 2005 information, including the assumption previously noted.

Note: Recycling of C&D debris would reduce total amounts.

During the peak development year (Year 1), MFH debris would increase the percent of waste disposed at the Pecan Grove Landfill by approximately 15.3 percent. This would drop to approximately 8.2 percent over the next two years and down to 3.5 percent over the final two

years. It is unlikely that all C&D debris would enter only one landfill. Distribution of C&D debris among all available landfills would further minimize the potential for adverse impacts to capacity, reducing the percent of total use to approximately 8 percent during Year 1, 4.3 percent for the following two years, and 1.8 percent thereafter.

#### **4.8.2.5 Cumulative Impacts**

Impacts to landfill capacity from generation of MFH household solid waste associated with the temporary influx of construction workers would be negligible. The impacts of C&D debris, in conjunction with Hurricane Katrina recovery and other projects at Keesler AFB, is difficult to quantify as the full scope of Katrina recovery efforts is not yet understood. If all C&D debris generated for the Proposed Action or the alternatives alone were to be delivered to a single landfill, it would potentially shorten the lifespan of that landfill, regardless of Katrina. It is likely that recovery efforts will exacerbate landfill impacts throughout the region.

#### **4.8.2.6 BMPs/Coordination**

The following BMPs would limit any adverse/cumulative impacts to local landfills resulting from the implementation of the Proposed Action or alternatives.

- Recycling and reuse of C&D debris (to the extent practicable).
- Distribution of C&D debris among the five local landfills.

### **4.9 INFRASTRUCTURE**

#### **4.9.1 Methodology**

Level of service (LOS) is the primary transportation and utility service-related issue. Criteria for evaluating impacts to transportation and utility service include the potential for disruption and/or permanent degradation of the resource. The ROI for the proposal as it relates to infrastructure is the area surrounding and including the housing areas as well as overall utility use.

#### **4.9.2 Impacts**

##### **4.9.2.1 No Action Alternative**

There would be a decrease in the amount of utility service needed at the installation associated with a net reduction of 521 housing units. However, this decrease would be offset by the 521 families that would be accommodated in the surrounding community. There may be a slight, short-term increase in county population associated with construction job creation.

Harrison County has a population of approximately 190,000; therefore, the potential increase in the total county population associated with additional workers from the No Action Alternative would not place an appreciable burden on utilities or providers in the local area.

#### **4.9.2.2 Proposed Action**

As with the No Action Alternative, there would be a decrease in the amount of utility service needed at the installation associated with a net reduction of 521 housing units. Again, this decrease would be offset by the 521 families that would be accommodated in the surrounding community. As with the No Action Alternative, there may be a slight, short-term increase in county population associated with construction job creation. However, this potential increase in the total county population would not place an appreciable burden on utilities or providers in the local area. No adverse impacts to utility providers are expected.

The average density of the housing areas under the Proposed Action would decrease to 3.5 units per acre from its present state of approximately 4.1 units per acre. Impacts to traffic in residential areas would be beneficial as wider roads may be provided and there would be less car traffic on residential streets. A temporary traffic influx would be associated with C&D activities during work hours. However, these increases are expected to be minor and would not adversely impact the LOS of local roadways or the entrance gate service.

#### **4.9.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project, as opposed to during the first three years as under the Proposed Action. As a result, potential impacts associated with Alternative 1 would be the same as those described under the Proposed Action; the Air Force expects minimal impacts to infrastructure under Alternative 1.

#### **4.9.2.4 Alternative 2 (Maximum Development Scenario)**

Under Alternative 2 there would be a decrease in the amount of utility service needed at the installation associated with a net reduction of 363 housing units. As with the Proposed Action, this decrease would be offset by the 363 families that would be accommodated in the surrounding community. With this exception, impacts to utilities would be the same as described under the Proposed Action.

The average density of the housing areas under the Proposed Action would be 4.0 units per acre, similar to the current density. Impacts to traffic in residential areas would be minor although more effective road patterns/alignments would be designed. A temporary traffic influx would be



associated with C&D activities during work hours. However, these increases are expected to be minor and would not adversely impact the LOS of local roadways or the entrance gate service. The local road system must be developed to meet all local requirements and standards, including obtaining the best possible alignment, grade, sight distance, and drainage for new roads relative to the new development and associated terrain.

#### **4.9.2.5 Cumulative Impacts**

Incremental impacts associated with utility infrastructure are associated with increasing use of utilities in the area. Overall, there would be only a small increase in population associated with worker influx over a period of five years, resulting in only a small increase in utility usage throughout Harrison County. Consequently, impacts to utilities of a cumulative nature would be minor. In general, there would be only a short-term increase in traffic on the base due to construction activity during work hours. However, overall cumulative transportation impacts would depend on the Alternative selected; under the Proposed Action and No Action Alternative cumulative impacts would be beneficial in that there would be less crowding and traffic within residential areas. Under Alternative 2, roadways within residential areas would be slightly more congested due to higher population and traffic density.

#### **4.9.2.6 BMPs/Coordination**

Implementation of the following BMP would minimize adverse impacts to residents associated with transportation.

- Incorporation of specific engineering design and traffic studies into site plans and related road systems for each new housing area developed as a part of the Alternatives. The objective of these reviews would be to make sure that future circulation patterns and new intersections do not create inadequate LOSs at new or existing intersections or along existing roads.

### **4.10 SOCIOECONOMICS**

#### **4.10.1 Methodology**

To assess the potential socioeconomic impacts of the Proposed Action and Alternative Actions, potential employment associated with development activities, as well as the adequacy of the local area to provide housing for new construction workers was analyzed.

#### 4.10.2 Impacts

The damage to housing along Mississippi's Gulf coast from Hurricane Katrina was considerable. According to the Congressional Budget Office, 300,000 homes have been destroyed in the region (Holtz-Eakin, 2005). It is estimated that in Harrison County alone, one-quarter of the housing will need to be rebuilt. That translates into approximately 20,000 new housing units. Additionally, estimates from the city of Biloxi are that at least 20 percent of all structures in the area will have to be reconstructed (Murray, 2005).

The privatization project will generate demand for workers during the construction and/or demolition phases. Prior to Hurricane Katrina, construction accounted for approximately five percent of total employment in the Biloxi-Gulfport Metropolitan Statistical Area, equating to approximately 6,450 construction-related jobs (Mississippi Department of Employment Security [MDES], 2005). Construction workers would typically be recruited from the local labor force, with specialty skills being provided by workers from inside and outside the region. However, due to hurricane evacuations and the lack of available lodging for potential workers in Louisiana and Mississippi, there is an acute labor shortage that is expected to last for some time.

Inventories of building materials and supplies, as well as the distribution systems for these goods, were also damaged or destroyed by the storms and flooding. Preliminary estimates indicate that the cost of rebuilding homes will rise substantially into the first quarter of 2006 due to the shortage of labor and materials. Afterwards, wages and materials price increases will slow as residents return to the region, while immigrants from other regions will be lured by high wages (Holtz-Eakin, 2005). The analysis presented in this section is based on pre-Katrina cost estimates, since the impact on labor/construction costs from the hurricane are still being assessed.

Typically, it would be expected that employment would be created in other industry groups as a result of: 1) the purchase of goods and services needed in the construction process, and 2) the consumption of goods and services made possible by wage and salary expenditures of the direct workers. This beneficial impact to the local economy would be short-term, occurring during construction activities. As indicated, it is unlikely that adequate labor resources would be available in the near term to fulfill the needs of the proposed project. However, any additional demands the proposed project may place on the availability of labor resources would not cause an adverse socioeconomic effect on minority populations and low-income populations as the entire Gulf Coast is in the same construction recovery phase. All socioeconomic levels would be impacted in the same manner.

#### 4.10.2.1 No Action Alternative

Under this alternative, Keesler would demolish 710 housing units over the next three years, renovate 878 units that are damaged, and construct 185 new units. It is estimated that approximately 920 construction-related jobs would be created during the three-year implementation period (Table 4-14). This represents an increase of approximately 14 percent over pre-Katrina construction-related employment.

Military families have already been relocated elsewhere from hurricane-damaged housing units; therefore, there would be no need for relocations associated with this alternative.

**Table 4-14. Potential Construction Employment Impacts of the No Action Alternative**

Activity	Cost per Unit (\$)	# of Housing Units	Total Cost (\$)
<b>Year 1-3</b>			
Construction <sup>a</sup>	155,000	185	28,675,000
Renovation <sup>b</sup>	116,250	878	102,067,500
Demolition <sup>c</sup>	5,000	710	3,550,000
		<b>Total Cost (\$<sup>d</sup>)</b>	<b>134,292,500</b>
		<b>Labor Costs (\$)<sup>e</sup></b>	<b>33,573,125</b>
		<b># of Workers</b>	<b>920</b>

a. Based on an average regional cost of \$62 per square-foot for new construction of a 2,500 square-foot house (Building Journal, 2005) – Note: Does not reflect cost increases associated with labor and material shortages resulting from Hurricane Katrina.

b. Assumes whole-house renovation costs are 75% of new-construction costs.

c. Based on an estimate for total demolition of a 1,600 square-foot house with concrete slab and driveway.

d. Assumes labor costs comprise 25% of total project costs.

e. Based on average annual salary (\$36,470) of skilled construction worker in the Gulfport-Biloxi Metropolitan Statistical Area (MDES, 2002)

#### 4.10.2.2 Proposed Action

Table 4-15 presents an estimate of the direct labor force that would be required as a result of the Proposed Action.

Under the Proposed Action, it is estimated that approximately 473 additional construction jobs would be created during the peak development year (Year 1). This represents an increase of approximately 7 percent over pre-Katrina construction-related employment. The number of new jobs would drop in the two following (Years 2 and 3) to approximately 358, or 5.5 percent over pre-Katrina levels.

**Table 4-15. Potential Construction Employment Impacts of the Proposed Action**

Activity	Cost per Unit (\$)	# of Housing Units	Total Cost (\$)
<b>Year 1</b>			
<b>Demolition<sup>b</sup></b>	<b>5,000</b>	<b>635</b>	<b>\$3,175,000</b>
<b>Construction<sup>a</sup></b>	<b>155,000</b>	<b>425</b>	<b>\$65,875,000</b>
		<b>Total Cost (\$)</b>	<b>\$69,050,000</b>
		<b>Labor Costs (\$)<sup>c</sup></b>	<b>\$17,262,500</b>
		<b># of Workers<sup>d</sup></b>	<b>473</b>
<b>Years 2-3</b>			
<b>Demolition<sup>b</sup></b>	<b>5,000</b>	<b>477</b>	<b>\$2,385,000</b>
<b>Construction<sup>a</sup></b>	<b>155,000</b>	<b>322</b>	<b>\$49,910,000</b>
		<b>Total Cost (\$)</b>	<b>\$52,295,000</b>
		<b>Labor Costs (\$)<sup>c</sup></b>	<b>\$13,073,750</b>
		<b># of Workers<sup>d</sup></b>	<b>358</b>

a. Based on an average regional cost of \$62 per square-foot for new construction of a 2,500 square-foot house (Building Journal, 2005) – Note: Does not reflect expected cost increases associated with labor and material shortages resulting from Hurricane Katrina.

b. Based on an estimate for total demolition of a 1,600 square-foot house with concrete slab and driveway.

c. Assumes labor costs comprise 25% of total project costs.

d. Based on average annual salary (\$36,470) of skilled construction worker in the Gulfport-Biloxi Metropolitan Statistical Area (MDES, 2002)

There would be additional labor demands associated with the construction of the community center, mini-storage warehouse, pool, and other quality of life improvements. However, the costs and labor associated with these projects would be minor compared to proposed housing construction activities. For example, it is estimated that a single-story 53,400-square foot mini-storage warehouse with concrete block and steel frame construction would cost between 3.5 and 5 million dollars (Reed Construction Data, 2006). This would add approximately 25 to 34 construction laborers to the workforce.

It is unlikely that in the near term there would be available housing in the local community for temporarily displaced military families or for any in-migration of workers, although available housing may be less of a problem toward the outer years of the project.

Overall impacts to socioeconomics as a result of implementing the Proposed Action would be beneficial but relatively minor.

#### **4.10.2.3 Alternative 1 (Immediate Privatization Alternative)**

Alternative 1 involves the same demolition and construction parameters as the Proposed Action, only the housing unit demolition and construction activities would occur throughout the length of the project (five years), as opposed to during the first three years as under the Proposed Action.

Consequently, potential impacts associated with Alternative 1 would be the same as those described under the Proposed Action, except that the impacts would be drawn out over the five-year period.

#### 4.10.2.4 Alternative 2 (Maximum Development Scenario)

Table 4-16 presents an estimate of the direct labor force that would be required as a result of this alternative.

**Table 4-16. Potential Construction Employment Impacts of Alternative 2**

Activity	Cost per Unit (\$)	# of Housing Units	Total Cost (\$)
<b>Year 1</b>			
Demolition <sup>b</sup>	5,000	635	\$3,175,000
Construction <sup>a</sup>	155,000	490	\$75,950,000
		<b>Total Cost (\$)</b>	<b>\$79,125,000</b>
		<b>Labor Costs (\$)<sup>c</sup></b>	<b>\$19,781,250</b>
		<b># of Workers<sup>d</sup></b>	<b>542</b>
<b>Years 2-3</b>			
Demolition <sup>b</sup>	5,000	345	\$1,725,000
Construction <sup>a</sup>	155,000	184	\$28,520,000
		<b>Total Cost (\$)</b>	<b>\$30,245,000</b>
		<b>Labor Costs (\$)<sup>c</sup></b>	<b>\$7,561,250</b>
		<b># of Workers<sup>d</sup></b>	<b>207</b>
<b>Years 4-5</b>			
Demolition <sup>b</sup>	5,000	132	\$660,000
Construction <sup>a</sup>	155,000	184	\$28,520,000
		<b>Total Cost (\$)</b>	<b>\$29,180,000</b>
		<b>Labor Costs (\$)<sup>c</sup></b>	<b>\$7,295,000</b>
		<b># of Workers<sup>d</sup></b>	<b>200</b>

a. Based on an average regional cost of \$62 per square-foot for new construction of a 2,500 square-foot house (Building Journal, 2005) – Note: Does not reflect expected cost increases associated with labor and material shortages resulting from Hurricane Katrina.

b. Based on an estimate for total demolition of a 1,600 square-foot house with concrete slab and driveway.

c. Assumes labor costs comprise 25% of total project costs.

d. Based on average annual salary (\$36,470) of skilled construction worker in the Gulfport-Biloxi Metropolitan Statistical Area (MDES, 2002)

Under Alternative 2, 542 additional construction jobs would be created during the peak development year (Year 1). This represents an increase of approximately 8.4 percent over pre-Katrina construction-related employment. There would also be additional jobs created as a result of construction of quality-of-life improvements. The number of new jobs would drop during the next two years (Years 2 and 3) to approximately 207, or 3.2 percent over pre-Katrina levels. During the final two years, the number of new jobs would drop to approximately 200 or

3.1 percent over pre-Katrina levels. It is unlikely that in the near term there would be available housing in the local community for temporarily displaced military families or for any in-migration of workers, although available housing may be less of a problem toward the outer years of the project.

In addition, it would be expected that employment would be created in other industry groups. This beneficial impact to the local economy would be short-term, occurring during construction activities.

#### **4.10.2.5 Cumulative Impacts**

As a result of Hurricane Katrina, there is a great need for skilled construction workers to assist with rebuilding activities in the region. Although there are some beneficial impacts to the local economy from planned demolition and/or construction activities, primarily during the first year of the project, these activities would also add to the shortage of skilled laborers in the region and pose negative impacts to local communities attempting to rebuild. However, these impacts would be shared equally by all socioeconomic levels. It is also unlikely that in the near term there would be available housing in the local community for temporarily displaced military families or for any in-migration of workers, although available housing and skilled workers would be less of a problem toward the outer years of the project.

#### **4.10.2.6 BMPs/Coordination**

Minor, although beneficial, impacts are expected to occur under all Alternatives (to include the No Action). As a result, no mitigations, BMPs, or coordinating activities are required.

### **4.11 CULTURAL RESOURCES**

#### **4.11.1 Methodology**

Impact analysis for cultural resources focuses on assessing whether implementation of the Proposed Action at the Alternative locations has the potential to affect cultural resources that are eligible for listing in the National Register or have traditional significance for American Indian groups. Under Section 106 of the NHPA, when a Federal action meets the definition of an undertaking, the Federal agency must consult with the SHPO and other identified consulting parties. The Federal agency is responsible for determining whether any historic properties are located in the area; assessing whether the proposed undertaking would adversely affect the resources; and notifying the SHPO of any adverse effects. An adverse effect is any action that may directly or indirectly change the characteristics that make the historic property eligible for listing in the National Register. If an adverse effect is identified, the Federal agency consults

with the SHPO and federally recognized American Indian tribes to develop measures to avoid, minimize, or mitigate the adverse effects of the undertaking.

Direct adverse effects to archaeological sites eligible for listing on the National Register may result from construction or demolition activities including clearing, grading, paving, utility installation, and earth moving. Indirect effects can occur from increased use of areas near or adjacent to archaeological sites resulting in vandalism, erosion, and other adverse effects.

#### **4.11.2 Impacts**

As stated previously, there are no known archaeological or Native American resources or known potential for such occurrences within the MFH areas at Keesler AFB (U.S. Air Force, 2003). Demolition of Keesler's Wherry and Capehart housing units will not interfere with the Air Force's commitments under a previous agreement with the Advisory Council on Historic Preservation, the NCSHPO, and the National Trust for Historic Preservation.

All the housing structures in the North Pinehaven area were determined to be ineligible for listing on the National Register of Historic Places by the installation due to the lack of architectural integrity (U.S. Air Force, 2003a). IICEP correspondence with the Mississippi SHPO confirms that no properties listed in or eligible for listing in the National Register of Historic Places will be affected by the proposed project (See Appendix A). The SHPO indicates that in the event that unrecorded cultural resources are encountered during project activities, the SHPO should be contacted immediately (Mississippi Department of Archives and History, 2006). This would be accomplished through coordination with 81 CES/CEVH.

##### **4.11.2.1 No Action Alternative**

No archaeological or historic resources would be affected by activities associated with the No Action Alternative.

##### **4.11.2.2 Proposed Action**

No archaeological or historic resources would be affected by activities associated with the Proposed Action.

##### **4.11.2.3 Alternative 1 (Immediate Privatization Alternative)**

No archaeological or historic resources would be affected by activities associated with Alternative 1.

#### **4.11.2.4 Alternative 2 (Maximum Development Scenario)**

No archaeological or historic resources would be affected by activities associated with Alternative 2.

#### **4.11.2.5 Cumulative Impacts**

Since the proposed project would not impact cultural resources, there would be no incremental, cumulative impact to cultural resources in or around the installation.

#### **4.11.2.6 BMPs/Coordination**

While the SHPO indicates that there would be no impacts to cultural resources associated with the proposed project, the SHPO notes that the Biloxi VA Medical Center, which is listed on the National Register of Historic Places, is adjacent to the project area. Project personnel should be made aware of its presence in order to avoid any potential problems. In addition, although the discovery of archaeological artifacts is only a remote possibility, should any artifacts be discovered during the project, all activities must cease and 81 CES/CEVH must be notified in order to coordinate with the SHPO.

### **4.12 SAFETY AND PROTECTION OF CHILDREN**

This section discusses potential impacts associated with safety and special risks to children (under 18) in accordance with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children)*.

#### **4.12.1 Methodology**

Impacts are assessed according to the potential to increase or decrease safety risks to installation and contractor personnel and the general public. The Proposed and Alternative Actions were considered to determine if additional or unique safety risks are associated with their undertaking. If an activity indicated a major variance from existing conditions, it would be considered a safety impact.

Impacts associated with special risks to children are related to hazardous materials, safety, and noise associated with the Proposed and Alternative Actions. Analyses focus on the exposure of children to the anticipated associated environmental effects.



#### **4.12.2 Impacts**

##### **Safety**

Several safety considerations are not an issue for this action. None of the proposed development overlaps safety zones around the runway. Also, no explosives would be used or handled during construction activities and the project would not result in any change to day-to-day use of hazardous materials at the installation.

Impacts are associated with the potential for site-development activities to pose risks to workers, installation personnel, or the general public. Additionally, heavy-equipment traffic would increase on roads in the family housing areas during construction and demolition periods. This is potentially incompatible where pedestrian movement is commonplace, and where children may be walking or playing.

##### **Protection of Children**

Safety concerns associated with the construction/demolition activities under the Proposed Action and Alternatives may pose special risks to children. While C&D activities would not use explosive or unique hazardous materials, other unique risks to children exist. For example, the project areas may be attractive to children for play and children could find access to these sites. Additionally, children possess different physiologic and behavioral characteristics than adults that make them more vulnerable to environmental effects. The risks that could potentially be associated with the Proposed Action and Alternative Actions are exposure to asbestos and LBP and safety concerns associated with noise from construction and demolition activities, since children are more sensitive to noise than adults.

##### **4.12.2.1 No Action Alternative**

Under the No Action Alternative, Keesler AFB would implement an O&M action that would involve C&D activities similar to those described under the Proposed Action, only on a smaller scale.

All activities and workers at construction sites would comply with OSHA standards and requirements. Workers would be required to conduct construction activities in a manner that would not pose any risks to personnel at or near the construction site. All materials and equipment would be used in accordance with industry and regulatory standards. All construction areas would be fenced to preclude public access. Given these measures, risks to personnel and the public, including children, would be minimized.

Hazardous materials including asbestos and LBP would be removed from the action area. Children, as well as the community as a whole, would benefit from the elimination of potential exposure. The proper planning and implementation of responsible handling and disposal techniques would offset the potential for impacts to any age group.

Noise associated with C&D activities would be intermittent and short in duration, and would not contribute in any appreciable manner to the existing noise environment (Section 4.6). As a result, special risks to children from C&D noise under the No Action Alternative are not anticipated. BMPs associated with the lake to minimize any potential impacts are described in Section 4.6.2.5.

#### **4.12.2.2 Proposed Action**

The impacts related to safety and protection of children under the Proposed Action would be similar to those of the No Action Alternative, although, the overall tempo of activities would be higher. All activities and workers at construction sites would be required to implement the same standards as described under the No Action Alternative. In addition, hazardous materials including asbestos and LBP would be removed from the action area. Given these measures, risks to personnel and the public, including children, would be minimized.

#### **4.12.2.3 Alternative 1 (Immediate Privatization Alternative)**

The impacts related to safety and protection of children under Alternative 1 would be similar to those of the Proposed Action. All activities and workers at construction sites would be required to implement the same standards as described under the No Action Alternative and the Proposed Action. In addition, hazardous materials including asbestos and LBP would be removed from the action area. Given these measures, risks to personnel and the public, including children, would be minimized.

#### **4.12.2.4 Alternative 2 (Maximum Development Scenario)**

The impacts related to safety and protection of children under Alternative 2 would be similar to those of the Proposed Action. All activities and workers at construction sites would be required to implement the same standards as described under the No Action Alternative and the Proposed Action. In addition, hazardous materials including asbestos and LBP, would be removed from the action area. Given these measures, risks to personnel and the public, including children, would be minimized.

#### **4.12.2.5 Cumulative Impacts**

Given the minimal potential for any safety-related impacts or risks to children, the Proposed Action or alternatives are not anticipated to result in incremental, cumulative impacts. Proper

implementation of safety BMPs would reduce the potential risks to all personnel, including children.

#### **4.12.2.6 BMPs/Coordination**

Coordination would be required between the developer and the installation prior to the implementation of construction activities to implement a plan addressing traffic and safety concerns. The plan would identify haul routes through neighborhoods, set speed limits on construction-related vehicles, and define other protocols to ensure safety of residents and children. Alternate access roads (for residents and/or construction traffic) would be defined in the plan. Appropriate detour and exit routes would be clearly signed on residential roadways to ensure unhindered access during emergencies. The Air Force and developer would be required to consider all aspects of child safety during work and non-work hours. This would include maintenance of restricted access during all aspects of the project—work hours, site preparation, and non-work hours—and the minimization of hazards for slips, trips, and falls associated with C&D activities.

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## 5. LIST OF PREPARERS

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## **List of Preparers**

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NEPA Specialist Planner

B.S. Environmental Science

Experience: 1.5 years environmental science and GIS

## 6. LIST OF PERSONS AND AGENCIES CONTACTED

Name	Title/ Responsibility	Organization
George Daniel	NEPA Program Manager	81 CES/CEV
Lisa Noble	IRP/Solid Waste Manager	81 CES/CEV
Charles Biondi	Asbestos/LBP/Hazardous Waste Manager	81 CES/CEV
James Morrison	Tanks Program Manager	81 CES/CEV
Elwood Isabelle	Entomology Supervisor	81 CES/CE
Kathleen Moon	Facilities Chief	81 CES/CEH
Brett Long	Housing Office	81 CES/CEH
Thomas Kostmayer	Housing Office	81 CES/CEH
Kathy Scoggins	Real Property	81 CES/CERR
Micelle Ugalde	Bio-Environmental Engineering	81 AMDS/SGPB
Edward Richards	Housing Privatization Project Manager	81 CES/CDHP
Don Kinman	Civil Engineer	81 CES/CECB
Roger Buenzow	Geobase Manager	81 CES/GIO
Jerry Taranto	Public Affairs	81 TRW/PA
Dick Brock	Legal	81 TRW/JA
Dan Longino	Field Technician	Natural Resources Conservation Service
Keith Taniguchi	Chief, Habitat Conservation Division	USFWS, Region 4
Elbert Hilliard	State Historic Preservation Officer	Mississippi Department of Archives and History
Ray Aycock	Field Supervisor	USFWS, Jackson Office
N/A	N/A	Army Corps of Engineers, Mobile District
N/A	N/A	Mississippi Department of Marine Resources
Mildred Thorp	Agency Representative	Mississippi Office of Federal Grants (Clearinghouse)
Charles Chisolm	Executive Director	MDEQ
N/A	N/A	Biloxi Community Development Department

N/A – Not Applicable

## **List of Persons and Agencies Contacted**

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## References

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## **APPENDIX A**

### **INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP) PROCESS AND PUBLIC INVOLVEMENT INFORMATION**



## **INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP)**

Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), outlined in Air Force Instruction (AFI) 32-7060, federal, state and local agencies are notified and allowed sufficient time to evaluate potential environmental impacts of a Proposed Action. This is accomplished by coordinating with regulatory agencies throughout the Environmental Impact Analysis Process. The Air Force determined conducting IICEP with the following regulatory agencies was appropriate for the Military Family Housing (MFH) privatization initiative at Keesler AFB:

- U.S. Fish and Wildlife Service (USFWS).
- Mississippi Department of Archives and History (SHPO).
- U.S. Army Corps of Engineers, Mobile District.
- Mississippi Department of Marine Resources.
- Mississippi State Clearinghouse for Federal Programs.
- Mississippi Department of Environmental Quality (MDEQ).
- Biloxi Community Development Department.

Initial IICEP was conducted with the agencies listed above during the development of the Description of the Proposed Action and Alternatives in order to identify any concerns associated with the project. Comments and information provided by these agencies were incorporated into the Draft EA, which was sent to the agencies for regulatory review. A summary of regulatory review comments associated with Description of Proposed Action and Alternatives (DOPAA) IICEP is provided below.

- USFWS.
  - There are no adverse wetland impacts associated with the project.
  - There are no listed, proposed, or candidate species present in the project area.
- Mississippi Department of Archives and History (SHPO).
  - No properties listed in or eligible for listing in the National Register of Historic Places will be affected by the proposed project.
- U.S. Army Corps of Engineers, Mobile District.
  - No response.
- Mississippi Department of Marine Resources.

- No response.
- Mississippi State Clearinghouse for Federal Programs.
  - Response associated with the Mississippi SHPO.
- MDEQ.
  - MDEQ does not feel that the project would result in any adverse ambient air quality impacts. This is based on the understanding that no air emissions equipment would be installed without first obtaining required permits from the MDEQ Permit Board.
  - MDEQ requires that any demolition activities comply with the MDEQ asbestos and lead-based paint control regulations.
- Biloxi Community Development Department.
  - No response.

Copies of the correspondence between the Air Force and the aforementioned public agencies are provided in the following pages.



**INITIAL DOPAA IICEP AND RESPONSES**

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**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115


Mr. Ray Aycock, Field Supervisor  
USFWS Jackson Office  
6578 Dogwood View Parkway, Suite A  
Jackson MS 39213

Dear Mr. Aycock

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

Please return written comments within 30 days from the date of this memorandum to Mr. George Daniel, 81 CES/CEVN, at the address indicated above. Any questions concerning the proposal should be directed to Mr. Eddie Richards, 81 CES/CEHP, at 228-377-5178. Thank you for your assistance.

Sincerely

  
JAMES J. CHINICHE, GS-13, P. E., REM  
Chief, Environmental Flight

3 Attachments:

1. Figure 1 – Location of Keesler AFB Housing Areas
2. Figure 2 – Proposed Project Activities for Western Housing Areas
3. Figure 3 – Proposed Project Activities for Eastern Housing Areas



**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

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81st Civil Engineer Squadron  
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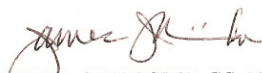
Mr. Keith Taniguchi  
Chief, Habitat Conservation Division  
USFWS Region 4  
1875 Century Blvd. Suite 200  
Atlanta GA 30345

Dear Mr Taniguchi

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

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AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
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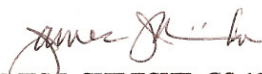
Mr. Elbert Hilliard, SHPO  
Mississippi Department of Archives and History  
PO Box 571  
Jackson MS 39205

Dear Mr. Hilliard

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

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**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

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81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115


Department of the Army  
Mobile District, Corps of Engineers  
P.O. Box 2288  
Mobile AL 36628-0001

Dear Agency Representative

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**DEPARTMENT OF THE AIR FORCE**  
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30 Jun 05

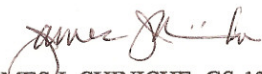
Mississippi Department of Marine Resources  
1141 Bayview Ave, Suite 101  
Biloxi MS 39530-1613

Dear Agency Representative

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

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**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115


Ms Mildred Thorp, Finance and Administration Department  
Office of Federal Grants (Clearing House)  
1301 Wool Folk Blvd, Suite E 501 NW Street  
Jackson MS 39201

Dear Ms Thorp

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

Please return written comments within 30 days from the date of this memorandum to Mr. George Daniel, 81 CES/CEVN, at the address indicated above. Any questions concerning the proposal should be directed to Mr. Eddie Richards, 81 CES/CEHP, at 228-377-5178. Thank you for your assistance.

Sincerely



JAMES J. CHINICHE, GS-13, P. E., REM  
Chief, Environmental Flight

## 3 Attachments:

1. Figure 1 – Location of Keesler AFB Housing Areas
2. Figure 2 – Proposed Project Activities for Western Housing Areas
3. Figure 3 – Proposed Project Activities for Eastern Housing Areas





**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115

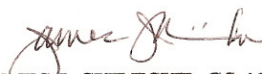
Mr. Charles Chisholm  
Executive Director  
Mississippi Department of Environmental Quality  
PO Box 20305  
Jackson MS 39289

Dear Mr. Chisholm

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

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Sincerely

  
JAMES J. CHINICHE, GS-13, P. E., REM  
Chief, Environmental Flight

3 Attachments:

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**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115


Biloxi Community Development Department  
P.O. Box 508  
Biloxi, MS 39533

Dear Agency Representative

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

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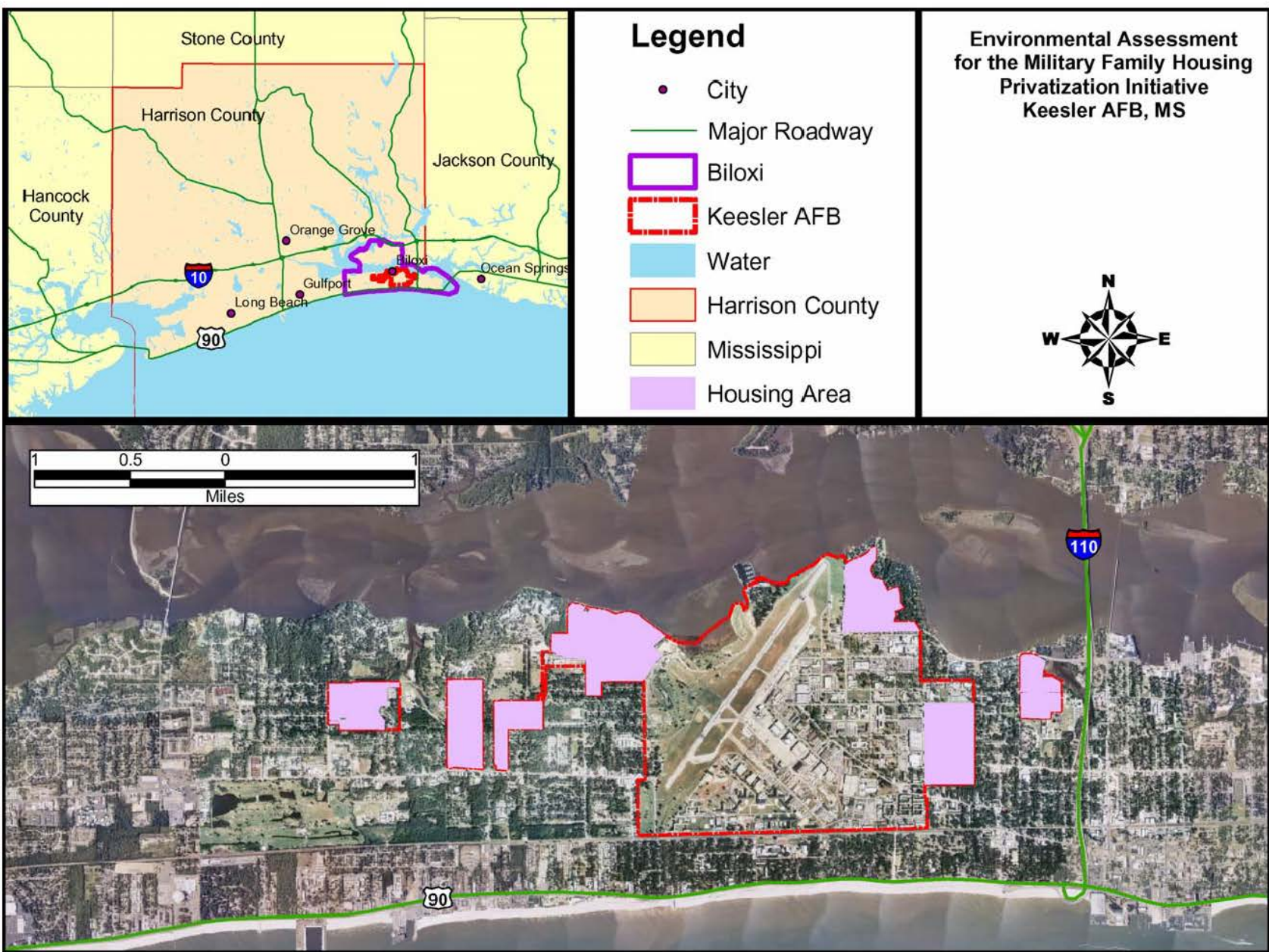
Sincerely

  
JAMES J. CHINICHE, GS-13, P. E., REM  
Chief, Environmental Flight

3 Attachments:

1. Figure 1 – Location of Keesler AFB Housing Areas
2. Figure 2 – Proposed Project Activities for Western Housing Areas
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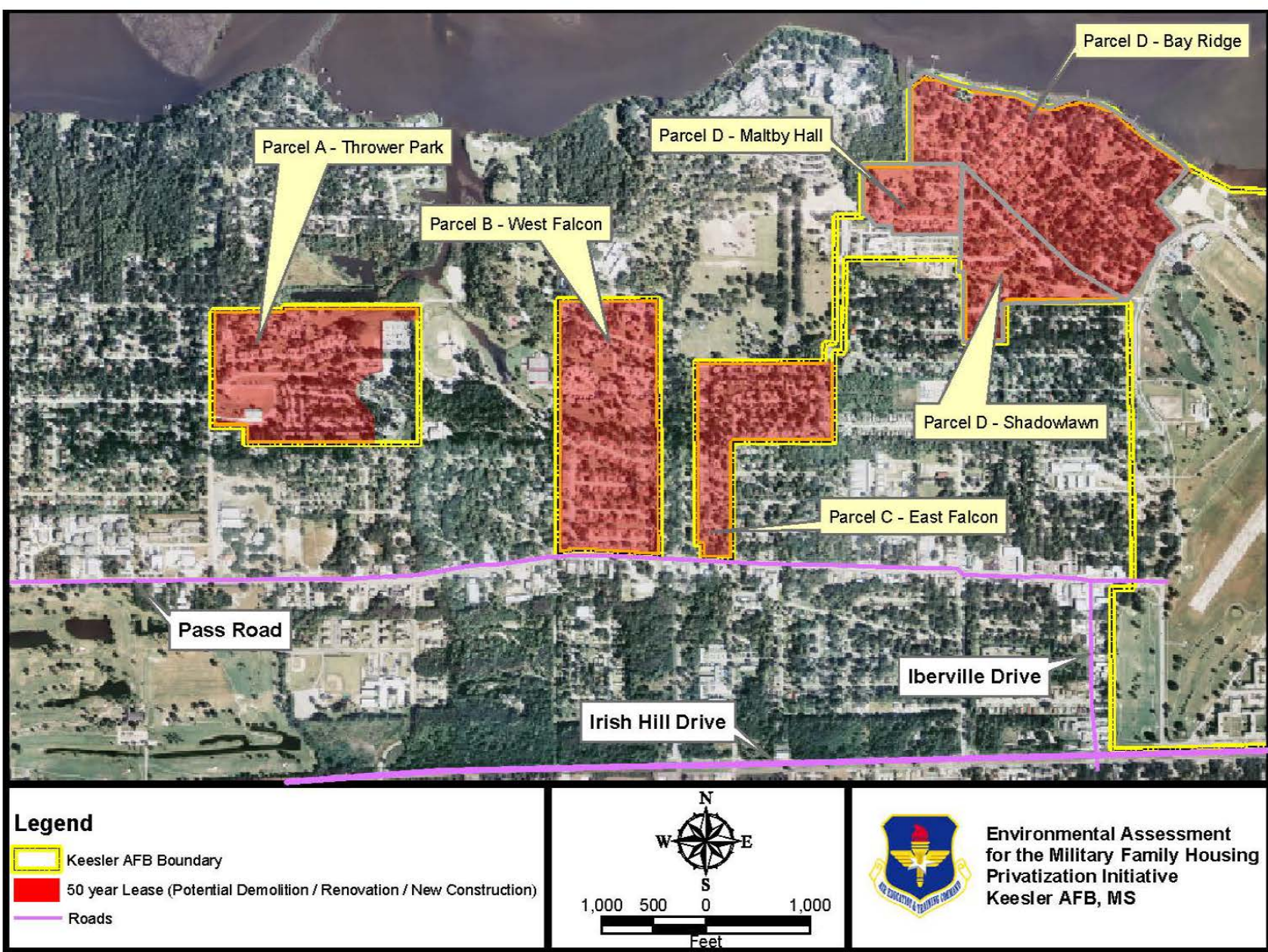


Figure A-2. Proposed Project Activities for Western Housing Areas







**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

30 Jun 05

James J. Chiniche  
Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115

Mr. Ray Aycock, Field Supervisor  
USFWS Jackson Office  
6578 Dogwood View Parkway, Suite A  
Jackson MS 39213

Dear Mr. Aycock

Pursuant to Section (102)(2)(c) of the National Environmental Policy Act of 1969, as implemented by the Council on Environmental Quality Regulations (40 Code of Federal Regulations Parts 1500-1508), the United States Air Force is preparing an environmental assessment for the privatization of all the military family housing units on Keesler Air Force Base, Mississippi. In accordance with Executive Order 12372, Intergovernmental Review of Federal Programs, we request your comments concerning the proposal and any potential environmental consequences associated with demolition and construction of houses in these areas. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects. Maps are attached for your reference.

Please return written comments within 30 days from the date of this memorandum to Mr. George Daniel, 81 CES/CEVN, at the address indicated above. Any questions concerning the proposal should be directed to Mr. Eddie Richards, 81 CES/CEHP, at 228-377-5178. Thank you for your assistance.

<input checked="" type="checkbox"/> No Significant adverse wetland impacts
<input checked="" type="checkbox"/> No listed, proposed or candidate species present
<i>Curtis B. James</i>
Environmental Coordinator
U.S. Fish and Wildlife Service
Log No. 05-703 Date 6/30/05

Sincerely

*James J. Chiniche*  
JAMES J. CHINICHE, GS-13, P. E., REM  
Chief, Environmental Flight

## 3 Attachments:

1. Figure 1 – Location of Keesler AFB Housing Areas
2. Figure 2 – Proposed Project Activities for Western Housing Areas
3. Figure 3 – Proposed Project Activities for Eastern Housing Areas





STATE OF MISSISSIPPI  
DEPARTMENT OF FINANCE AND ADMINISTRATION

## MEMORANDUM

TO: DEPARTMENT OF THE AIR FORCE  
81ST CIVIL ENGINEER SQUADRON  
508 L STREET  
KEESLER AFB MS 39534 2115

DATE: JUL 21 2005

FROM: STATE CLEARINGHOUSE FOR FEDERAL PROGRAMS

SUBJECT: REVIEW COMMENTS - Activity:  
PRIVATIZATION OF ALL THE MILITARY FAMILY HOUSING UNITS ON  
KEESLER AIR FORCE BASE WITH ASSOCIATED DEMOLITION AND  
CONSTRUCTION OF HOUSES

State Application Identifier Number MS050701-004R

Location: HARRISON

Contact: JAMES J CHINICHE

The State Clearinghouse, in cooperation with state agencies interested or possibly affected, has completed the review process for the activity described above.

## INTERGOVERNMENTAL REVIEW PROCESS COMPLIANCE:

- (✓) We are enclosing the comments received from the state agencies for your consideration and appropriate actions. The remaining agencies involved in the review did not have comments or recommendations to offer at this time. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.
- ( ) Conditional clearance pending Archives and History's approval.
- ( ) None of the state agencies involved in the review had comments or recommendations to offer at this time. This concludes the State Clearinghouse review, and we encourage appropriate action as soon as possible. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.
- ( ) The review of this activity is being extended for a period not to exceed 60 days from the receipt of notification to allow adequate time for review.

## COASTAL PROGRAM COMPLIANCE (Coastal area activities only):

- ( ) The activity has been reviewed and complies with the Mississippi Coastal Program. A consistency certification is to be issued by the Mississippi Department of Marine Resources in accordance with the Coastal Zone Management Act.
- ( ) The activity has been reviewed and does not comply with the Mississippi Coastal Program.

cc: Funding Agency (As requested by applicant)

1301 Woolfolk Building, Suite E • Jackson, Mississippi 39201 • (601) 359-6762 • Fax (601) 359-6758  
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HISTORIC PRESERVATION  
PO Box 571, Jackson, MS 39205-0571  
601-576-6940 • Fax 601-576-6955  
mdah.state.ms.us

MS050701-004R

July 8, 2005

Mr. George Daniel  
81 CES/CEVN  
81<sup>st</sup> Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115

RE: Proposal for privatization of all the military family housing on Keesler AFB,  
Harrison County

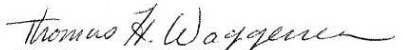
Dear Mr. Daniel:

We have reviewed the above referenced request for cultural resources assessment pursuant to Section 106 of the National Historic Preservation Act and 36 CFR Part 800. It is our determination that no properties listed in or eligible for listing in the National Register of Historic Places will be affected. Therefore, we have no reservations with the proposal. Although it should not be affected by this undertaking, we note that the Biloxi VA Medical Center, which is adjacent to several of the housing areas, is listed on the National Register of Historic Places.

Should there be additional work in connection with the project, or any changes in the scope of work, please let us know in order that we may provide you with appropriate comments in compliance with the above referenced regulations. There remains a very remote possibility that unrecorded cultural resources may be encountered during construction. Should this occur, we would appreciate your contacting us immediately so that we may take appropriate steps under 36 CFR 800, part 13, regarding our response within forty-eight hours. If we can be of further assistance, please do not hesitate to contact this office.

Sincerely,

H. T. Holmes  
State Historic Preservation Officer

  
By: Thomas H. Waggener  
Review and Compliance Officer

cc: Clearinghouse for Federal Programs

Board of Trustees: William F. Winter, president / Arch Dalrymple III / Kane Ditto / Lynn Crosby Gammill / E. Jackson Garner  
Gilbert R. Mason, Sr. / Duncan M. Morgan / Martis D. Ramage, Jr. / Rosemary Taylor Williams / Department Director: H. T. Holmes





STATE OF MISSISSIPPI  
HALEY BARBOUR  
GOVERNOR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

August 10, 2005

Mr. James J. Chiniche  
Chief, Environmental Flight  
81<sup>st</sup> Civil Engineer Squadron  
508 L. Street  
Keesler AFB MS 39534-2115

RE: Military Family Housing:

- Parcel A – Thrower Park
- Parcel B – West Falcon
- Parcel C – East Falcon
- Parcel D – Shadowlawn
- Parcel D – Maltby Hall
- Parcel D – Bay Ridge

Dear Mr. Chiniche:

We have reviewed the information that has been provided to us concerning the referenced project. As a result, we are of the opinion that this project will cause no significant adverse ambient air quality impact. This is based on the understanding that there will be no air emissions equipment installed without first obtaining required permits from the Mississippi Department of Environmental Quality Permit Board. Also, there must be no building demolition or renovation activities that fail to comply with the Department's asbestos and lead-based paint control regulations. Guidance is enclosed to assist in the determination of the need for permitting and applicability of asbestos and lead-based paint control regulations. We will be glad to provide additional guidance should it be needed.

To expedite handling of future requests concerning ambient air quality impact, please forward correspondence to:

Air Quality Impact Review  
% Air Toxics Branch  
101 West Capitol Street, Suite 100  
Jackson, MS 39201

If you have any questions or need further assistance, please do not hesitate to contact me at (601) 961-5799.

Sincerely yours,

A handwritten signature in blue ink, appearing to read "Bryan Williams".  
Bryan Williams  
Air Toxics Branch

Enclosures

OFFICE OF POLLUTION CONTROL  
POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • [www.deq.state.ms.us](http://www.deq.state.ms.us)  
AN EQUAL OPPORTUNITY EMPLOYER



STATE OF MISSISSIPPI  
GOVERNOR HALEY BARBOUR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

## GUIDANCE ON THE APPLICABILITY OF ASBESTOS REGULATIONS

The Mississippi Department of Environmental Quality's asbestos control regulations apply to demolition and renovation operations to protect against building or facility activities that may cause asbestos air emissions. *Demolition* means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility. *Renovation* means altering a facility or one or more facility components in any way, including the stripping or removal of regulated asbestos containing material from a facility component.

In order to assure compliance, owners and operators of regulated demolition or renovation operations should:

- have a thorough inspection performed to determine the presence and required treatment of asbestos containing materials before demolition or renovation activity;
- obtain certified personnel for inspections and asbestos abatement activities;
- submit a demolition notification to the Mississippi Department of Environmental Quality ten (10) working days before demolition activity.
- submit a renovation notification to the MDEQ ten (10) working days before any renovation activity disturbing more than 160 square feet, 260 linear feet or 35 cubic feet of regulated asbestos containing materials;

Demolition and renovation activities for any individual residence and/or residential buildings having four or fewer dwelling units are excluded from the regulations. However, when the demolition or renovation activity is under the control of a local government and/or when the activity is part of a public, private, or commercial development there must be no more than one (1) small residential building on a site affected and no demolition by burning the structure.

For copies of the regulations, the Demolition/Renovation Notification Form, or other information, please contact the Department's Asbestos Section by calling (601) 961-5171.

OFFICE OF POLLUTION CONTROL  
POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • [www.deq.state.ms.us](http://www.deq.state.ms.us)  
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STATE OF MISSISSIPPI  
GOVERNOR HALEY BARBOUR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

**WHEN SHOULD A FACILITY OBTAIN A PERMIT TO  
CONSTRUCT AIR EMISSIONS EQUIPMENT**

A Permit to Construct is required before beginning construction, reconstruction, or modification of equipment, machines, devices, articles, contrivances, or installations that will have air pollutant emissions. *Construction* means the initial installation or construction of any air emissions equipment, machines, devices, articles, or contrivances. *Reconstruction* means the replacement of components of any existing facility such that the fixed capital cost of the new components exceed 50 percent of the fixed capital cost of a new facility. *Modification* means any physical change or change in the method of operation of an existing facility resulting in new or increased emissions.

A Permit to Construct must be obtained before beginning construction in the following situations unless otherwise provided for in the attached list of exclusions:

1. construction or installation of emissions equipment at a new facility site or business location;
2. an existing facility plans to install additional or larger capacity equipment which will increase the emissions potential of the facility;
3. an existing facility plans to replace components of a system such that the cost will exceed 50 percent of the fixed capital cost of a new facility; or
4. an existing facility plans to begin using other raw materials, fuel, etc. that will result in different or increased air pollutant emissions.

**WHAT ABOUT THE NEED FOR AN OPERATING PERMIT?**

A Permit to Operate is needed for the operation of air emission equipment at a synthetic minor source, major Title V source, or a significant minor source. A Permit to Operate for a new or modified facility is obtained in connection with the facility receiving a Construction Permit (if required) and then completing and providing certification of construction in accordance with approved plans. The attached list of exclusions from permitting should be reviewed for applicability. Any existing facilities that are operating air emissions equipment without an operating permit and are not categorically exempt from doing so, should contact the agency for additional guidance.

For a copy of a permit application, a copy of our permitting regulations, or any other information, please contact the Department's Environmental Permits Division by calling (601) 961-5171 or by accessing our web site at [www.deq.state.ms.us/newweb/homepages.nsf](http://www.deq.state.ms.us/newweb/homepages.nsf).

Attachment

OFFICE OF POLLUTION CONTROL  
POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • [www.deq.state.ms.us](http://www.deq.state.ms.us)  
AN EQUAL OPPORTUNITY EMPLOYER



## PERMITTING EXCLUSIONS

## A. CATEGORICAL EXCLUSIONS FROM BOTH PERMITS TO CONSTRUCT AND OPERATE

The following machines, devices, articles, contrivances, or facilities are excluded from the requirement for a permit to construct or a permit to operate.

1. Residential heating, cooking, or cleaning devices.
2. Residential yard and garden equipment.
3. Mobile sources.
4. Manufacturing plants with total raw material inputs, excluding air, of less than 50 lbs/hr.
5. Dedicated fuel stations with total storage capacity less than 55,000 gallons and no individual tank greater than 10,560 gallons.
6. Air conditioning, space heating, or ventilating systems not uniquely designed or operated in a manner to remove air contaminants generated by or released from equipment.
7. Stationary sources, other than incinerators or CAFOs, which do not emit or have potential uncontrolled emissions of 10 TPY or more of either  $PM_{10}$ ,  $SO_2$ ,  $NO_x$ , CO or VOC, nor 1.0 TPY of a HAP, nor 2.5 TPY of all HAPs.
8. Feed milling facilities which mill, formulate, or otherwise prepare animal feed products for direct local retail sale solely in prepackaged form and are not associated with a grain elevator. Milling facilities engaged in preparing feed products for wholesale distribution and/or bulk sale are not included in this exclusion.
9. Groundwater recovery/treatment facilities used for the remediation of motor fuel contamination addressed under the Underground Storage Tank Program when the facilities are located on the site of the contamination.
10. Temporary storage/aeration of soils contaminated with motor fuel which are produced as a result of a remedial response to a release from an underground storage tank when the storage/operation is on the site of the tank.
11. CERCLA/Superfund remediation or removal projects on the site of the contamination.
12. Remediation of sites contaminated with hazardous constituents required under State authority on the site of the contamination.
13. Portable treatment facilities permitted by TSCA.
14. Sawmills/woodworking plants which do not have drying kilns onsite and process less than 25,000 board feet/day.
15. Wastewater collection and treatment facilities, other than CAFOs or those listed in 40 CFR 61, Subpart FF - National Emission Standard for Benzene Waste Operations and in 40 CFR 60, Subpart QQQ, - Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems, which have the potential to emit no more than 5 tons/year of Volatile Organic Compounds (VOC).

16. Any equipment used exclusively for preparation of food for direct retail sale at a restaurant, cafeteria, bakery, or food service.
17. Surface coal mining operations for which a permit has been issued by the Permit Board pursuant to Miss. Code Ann. 53-9-1 et. seq. or by the Federal Office of Surface Mining pursuant to the Federal Surface Mining Control and Reclamation Act, 30 U.S.C. 1201 et. seq. However, any rock crushers, pneumatic conveyors, and dust collectors at such operations may require permitting if they meet the definition of "stationary source".
18. Auto body shops with only one (1) paint spray booth and with substantial portions of business devoted to repainting entire vehicles or collision repairs.
19. Surface sand and/or gravel mining operations which do not utilize rock crushers, pneumatic conveyors, or dust collectors.
20. Recreational heaters.
21. Gasoline service stations with no more than 17 refueling positions.
22. Retail propane filling operations
23. Subject to Section XII.H., any existing or new animal feeding operation that is not a concentrated animal feeding operation (CAFO) and that does not incinerate animal carcasses or waste. For the purpose of this Paragraph 23, "animal feeding operation" means any facility where animals have been, are, or will be stabled or confined, or allowed to roam or graze within a fenced or otherwise restricted area. This definition includes, but is not limited to, aquatic animal production facilities, kennels, swine growing operations, veal farms, chicken growing operations, cattle growing operations, and dairies.

#### B. NEW SOURCE EMISSION-BASED EXCLUSIONS FROM PERMITS TO CONSTRUCT

Greenfield sites which have only the following operations or a combination of the following operations and no other operations and which do not emit or have the potential to emit 100 tons per year or more of TSP, PM<sub>10</sub>, SO<sub>2</sub>, NOX, CO or VOC; 10 tons per year or more of a hazardous air pollutant (HAP) or 25 tons per year or more of HAPs are excluded from the requirement for a permit to construct.

1. Coal or residual oil-fired combustion devices or groups of devices with a total rated input capacity of less than 2,000,000-BTU/hr; clean wood waste boilers or groups of boilers with a total rated input capacity of less than 10,000,000 BTU/hr, distillate oil or combination distillate and gas-fired units or groups of units with a total rated input capacity less than 10,000,000 BTU/hr and natural gas fired and/or LPG fired devices or groups of devices with all individual rated input capacities of less than 10,000,000 BTU/hr and a total rated input capacity less than 25,000,000 BTU/hr.
2. Electrically driven motors, compressors, and/or generators.
3. Initial field testing of oil and gas wells, after proper notification to the Commission, provided such tests will not produce 100 tons per year or more of any pollutant.
4. Equipment used exclusively for oil and gas field production, gathering, storing, and transmission, including, but not limited to: Gas/oil separators, emulsion treaters, free water knockouts, compressors or group of compressors with a total rated capacity less than 500 brake horsepower, segregation basins, API oil/water separators, tank facilities, and crude oil loading equipment used solely for crude oil collected from production wells onsite. Continuous flaring of sour gas and/or

combustion devices firing sour gas are not excluded from permitting.

5. Emergency safety relief systems, including pilot lights.
6. Sand blasting operations which use no more than 83 tons of sand in any given 365-day period.
7. Wood, plastic, and/or metal machining operations which are totally enclosed within a building, and which have no direct exhausts to the ambient air other than common building ventilation points.
8. Petroleum products storage facilities with no individual storage tank greater than 10,560 gallons and total storage capacity less than 55,000 gallons.
9. A compressor or groups of compressors firing either natural gas, gasoline, LPG and/or diesel fuel with a total rated capacity less than or equal to 500 brake-horsepower.
10. Outdoor kerosene heaters.
11. Refrigeration systems.
12. Surface coating operations which utilize less than 50 pounds per day of all solvents and coatings.
13. Fire training exercises and equipment.

#### **C. MODIFICATION EXCLUSION FROM PERMIT TO CONSTRUCT AND EXCEPTIONS THERETO**

A modification which falls into one of the following categories is subject to the requirements for a permit to construct:

1. a major modification;
2. a moderate modification;
3. a modification involving medical waste incineration or hazardous waste incineration; or,
4. a modification meeting the definition of "constructing or reconstructing a major source of hazardous air pollutants" in Commission "Air Toxics Regulations", APC-S-8, and 40 CFR Part 63, Subpart B and thereby requiring a case-by-case Maximum Achievable Control Technology (MACT) determination.

Any other modifications are excluded from the requirement for permits to construct. This does not eliminate any requirement for modification of Title V permits or permits to operate.

#### **D. MINOR SOURCE EXCLUSION FROM PERMIT TO OPERATE**

Any minor stationary source other than a synthetic minor source or a significant minor source as defined in these regulations is excluded from the requirement to obtain a permit to operate. Only those stationary sources listed in D. and E. above are excluded from the requirement to obtain a permit to construct.

K:\DOCS\airtoxio\facility2.qwc.wpd





STATE OF MISSISSIPPI  
GOVERNOR HALEY BARBOUR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

### GUIDANCE ON THE APPLICABILITY OF LEAD-BASED PAINT REGULATIONS

The Mississippi Department of Environmental Quality's Lead-Based Paint regulations, effective August 31, 1998, apply to lead-based paint abatement activities performed in Target Housing and Child-Occupied Facilities to protect human health and the environment from the hazards of lead-based paint. These regulations do not require the performance of lead-based paint activities or the mandatory abatement of lead-based paint, but establish requirements and procedures to be followed when lead-based paint activities are performed. "Abatement" means any measure or set of measures designed to permanently eliminate lead-based paint hazards. Abatement does not include renovation, remodeling, painting or repainting, landscaping or other activities when such activities are not designed to permanently eliminate lead-based paint hazards. "Child-occupied facility" means a building or portion of a building constructed prior to 1978, visited regularly by the same child, 6 years of age and under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours, the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day-care centers, preschools and kindergarten classrooms. "Target housing" means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.

In order to assure compliance, owners and operators of regulated operations should:

- use certified personnel for inspections and abatement activities.
- submit a project notification form of lead-based paint abatement activities to the Mississippi Department of Environmental Quality no less than six (6) working days prior to commencement of the activity.
- obtain laboratory analyses from laboratories recognized by EPA as being capable of performing analysis for lead compounds in paint, dust, and soil samples.

The regulations are applicable to all persons engaged in lead-based paint activities in target housing and child-occupied facilities; however, persons who perform lead-based paint activities within residential dwellings they own are exempt from the regulations, unless the residential dwelling is occupied by a person or persons other than the owner or owner's immediate family while these activities are being performed, or a child residing in the building has been identified as having an elevated blood lead level as determined by the United State Department of Health and Human Services; Centers for Disease Control.

For copies of the regulations, project notification form, or other information, please contact the Mississippi Department of Environmental Quality's Lead Certification Section by calling (601) 961-5171 or toll free at 1-877-671-7139.

OFFICE OF POLLUTION CONTROL  
POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • [www.deq.state.ms.us](http://www.deq.state.ms.us)  
AN EQUAL OPPORTUNITY EMPLOYER

*Common Questions  
on the  
Lead-Based Paint Regulations*



*What is the general scope and applicability of Mississippi's Regulations for Lead-Based Paint Activities"?*

The regulations contain procedures and requirements for the accreditation of lead-based paint activities training programs, procedures and requirements for the certification of inspectors, risk assessors, project designers, supervisors, workers and firms engaged in lead-based paint activities in target housing and child-occupied facilities and work practice standards for performing such activities.

*What is meant by "lead-based paint activities"?*

"Lead-based paint activities" means, in the case of target housing and child-occupied facilities, inspection, risk assessment, and abatement.

*What is meant by "target housing"?*

"Target housing" means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0-bedroom dwelling.

*What is meant by "child-occupied facility"?*

"Child-occupied facility" means a building or portion of a building constructed prior to 1978, visited regularly by the same child, 6 years of age and under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day-care centers, preschools and kindergarten classrooms.

*What is meant by "abatement"?*

"Abatement" means any measure or set of measures designed to permanently eliminate lead-based paint hazards. Abatement includes, but is not limited to:

- a. The removal of lead-based paint and lead-contaminated dust, the permanent enclosure or encapsulation of lead-based paint, the replacement of lead-painted surfaces or fixtures, and the removal or covering of lead-contaminated soil; and
- b. All preparation, cleanup, disposal, and post-abatement clearance testing activities associated with such measures.

However, abatement does not include renovation, remodeling, painting or repainting, landscaping or other activities, when such activities are not designed to permanently eliminate lead-based paint hazards, but, instead, are designed to repair, restore, or remodel a given structure or dwelling, even though these activities may incidentally result in a reduction or

elimination of lead-based paint hazards. Furthermore, abatement does not include interim controls, operations and maintenance activities, or other measures and activities designed to temporarily, but not permanently, reduce lead-based paint hazards.

*What is meant by "lead-based paint hazard"?*

"Lead-based paint hazard" means any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as identified by the Department pursuant to the federal Toxic Substances Control Act (TSCA) section 403.

*Who must be certified to perform lead-based paint activities?*

The regulation states "No person may engage in lead-based paint activities in target housing or child-occupied facilities as an inspector, risk assessor, project designer, supervisor, worker, or firm on or after the effective date of these regulations, unless applicable initial or renewed certificates to so engage in lead-based paint activities have been issued to such persons by the Commission, and are currently in effect".

*Can an individual perform lead-based paint activities in their own home?*

Persons who perform lead-based paint activities within residential dwellings that they own are exempt from the regulations unless the residential dwelling is occupied by a person or persons other than the owner or owner's immediate family while these activities are being performed, or a child residing in the building has been identified as having an elevated blood lead level as determined by the United States Department of Health and Human Services; Centers for Disease Control and Prevention.

*What is meant by "residential dwelling"?*

"Residential dwelling" means (1) a detached single family dwelling unit, including attached structures such as porches and stoops; or (2) a single family dwelling unit in a structure that contains more than one separate residential dwelling unit, which is used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons.

*Are project notifications required?*

Yes, the Department's project notification form must be submitted to the Department's Lead Section, six (6) working days prior to commencement of the activity.

*Do the regulations require specific work practice standards to be followed when performing lead-based paint activities in target housing and child-occupied facilities?*

Yes, the work practice standards to be followed when performing lead-based paint activities in

target housing and child-occupied facilities are located in Chapter III of the regulations."

*What are the certification requirements in order for a person to be certified to perform lead-based paint activities?*

Certification requirements vary depending on the certification being applied for. Each certification discipline requires successful completion of the required training course(s) specific to the discipline. Additional requirements could include education, professional and related work experience, depending on the discipline. Chapter II of the regulations contains the requirements for the different certification disciplines.

*Are the regulations applicable to lead-based paint activities performed by governmental agencies?*

Yes.

*When did the regulations become effective?*

August 31, 1998.

*What are the job responsibilities of a certified inspector?*

A certified inspector conducts an inspection to determine the presence of lead-based paint and provides a report explaining the results of the investigation. This investigation is limited to the use of an XRF instrument or taking paint chip samples. A certified inspector also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

*What are the job responsibilities of a certified risk assessor?*

A certified risk assessor conducts an investigation to determine the existence, nature, severity and location of lead-based paint hazards and provides a report explaining the results of the investigation. The investigation may include the use of an XRF instrument, taking paint chip samples, taking dust wipe samples or taking soil samples. A risk assessor also samples for the presence of lead in dust and soil for the purposes of abatement clearance testing.

*Can a certified lead-based paint inspector perform a Lead Hazard Screen or a Risk Assessment?*

No. Lead hazard screens and risk assessments can only be performed by a certified risk assessor.

*Can a certified risk assessor perform lead-based paint inspections?*

Yes, as provided for in chapter III, B.1 of the regulations, certified risk assessors can perform the same lead-based paint inspections as those performed by a certified inspector.

**DRAFT EA AND FONSI IICEP AND RESPONSES**

On 25 February 2006, the Air Force published a Notice of Availability in Biloxi's Sun Herald newspaper notifying the public that the Draft EA and Draft FONSI were available for public review and comment at the West Biloxi Library through 10 March 2006. The Air Force also sent the documents to the MS Department of Environmental Quality, MS State Historic Preservation Officer, U.S. Fish and Wildlife Service, MS Department of Marine Resources, U.S. Army Corps of Engineers, MS State Clearinghouse, and City of Biloxi Community Development Department. The review period lasted 14 days. No comments associated with the project were received from the public. The following summarizes the comments received by the aforementioned regulatory agencies and the Air Force responses, if any, to the respective comments:

- MS Department of Environmental Quality
  - Comment(s): No comments or concerns were identified.
- MS State Historic Preservation Officer
  - Comment(s): The SHPO has no reservations associated with the Proposed Action or alternatives. In the event that unrecorded cultural resources are encountered during project activities, the SHPO should be contacted immediately.
  - Air Force Response: This has been addressed in Sections 2.10 and 4.11.2 of the Final EA.
- U.S. Fish and Wildlife Service
  - Comment(s): No comments or concerns were identified.
- MS Department of Marine Resources
  - Comment(s): The Department requests that BMPs are implemented to minimize the potential for indirect erosional impacts to wetland areas adjacent to project sites.
  - Air Force Response: This has been addressed in Sections 2.10 and 4.2.2.6 of the Final EA.
- U.S. Army Corps of Engineers
  - Comment(s): Recommendation to add a section after "Environmental Consequences" called "Findings and Conclusions" in order to briefly recap the findings and conclude that an Environmental Impact Statement (EIS) is not required.
  - Air Force Response: After consideration of the recommendation, the Air Force has determined that the existing Air Force EA and FONSI formats already provide the information requested. Specifically, Table 2-9 of the EA and the sections of the FONSI titled "Summary of Findings" for the Proposed Action and each of the action

alternatives provides a summary of potential impacts, and the section of the FONSI titled “Finding of No Significant Impact” provides the rationale for the conclusion that an EIS is not required. Consequently, the Air Force has made no changes to the existing format of the EA.

- MS State Clearinghouse
  - Comment(s): No comments or concerns were identified.
- City of Biloxi Community Development Department
  - Comment(s): No comments or concerns were identified.

Copies of the public Notice of Availability correspondence between the Air Force and the aforementioned public agencies are provided in the following pages.



**NOTICE OF AVAILABILITY  
DRAFT ENVIRONMENTAL ASSESSMENT AND  
PROPOSED FINDING OF NO SIGNIFICANT IMPACT  
FOR MILITARY FAMILY HOUSING REVITALIZATION  
AT  
KEESLER AIR FORCE BASE, MS**

An Environmental Assessment (EA) has been prepared to analyze proposed military family housing revitalization at Keesler AFB, MS. The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the proposed and alternative actions, including the No Action Alternative, on the environment. Based on the EA, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

A copy of the EA and proposed FONSI are available at the West Biloxi Library, 2047 Pass Rd, Biloxi, MS 39531 - (228) 388-5696

Comments may be submitted through March 10, 2006 and be provided to George Daniel, 81CES/CEV, 508 L Street Keesler AFB, MS 39534, (228-377-5823).

E-mail: [george.daniel@keesler.af.mil](mailto:george.daniel@keesler.af.mil)

**PRIVACY ADVISORY NOTICE**

Your comments on this Draft Environmental Assessment (EA) are requested. Letters or other written comments provided may be published in the Final EA. As required by law, comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.



**DEPARTMENT OF THE AIR FORCE**  
**AIR EDUCATION AND TRAINING COMMAND**

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115

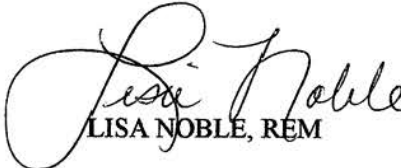
Mr. Phil Bass  
Mississippi Department of Environmental Quality  
PO Box 20305  
Jackson MS 39289

Dear Mr. Bass

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment





**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115

Mr. Thomas H. Waggener, SHPO  
Mississippi Department of Archives and History  
PO Box 571  
Jackson MS 39205

Dear Mr. Waggener

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

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Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment



**DEPARTMENT OF THE AIR FORCE**  
**AIR EDUCATION AND TRAINING COMMAND**

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115

Mr. Ray Aycock  
Field Supervisor  
U. S. Fish and Wildlife Service  
6578 Dogwood View Pkwy, Suite A  
Jackson MS 39213

Dear Mr. Aycock

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment



**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115

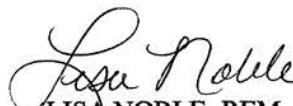
Mr. Jerry Brashier  
Mississippi Department of Marine Resources  
1141 Bay View Ave, Suite 101  
Biloxi MS 39530-1613

Dear Mr. Brashier

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment



**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115

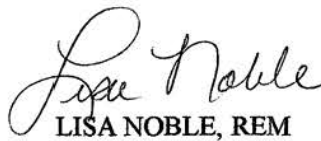
Ms Susan Rees  
Department of the Army  
Mobile District, corps of Engineers  
P O Box 2288  
Mobile AL 36628-1613

Dear Ms Rees

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment



**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115


Ms Janet Riddell  
Dept of Finance and Administration  
Office of Federal Grants (Clearing House)  
1301 Wool Folk Blvd, Suite E 501 NW Street  
Jackson MS 39201

Dear Ms Riddell

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment



**DEPARTMENT OF THE AIR FORCE**  
AIR EDUCATION AND TRAINING COMMAND

Lisa Noble  
Deputy Chief, Environmental Flight  
81st Civil Engineer Squadron  
508 L Street  
Keesler AFB MS 39534-2115


Mr. Jerry Creel  
Director  
Community Development  
P O Box 508  
Biloxi MS 39533

Dear Mr. Creel

Enclosed for your review and comment is the Draft Environmental Assessment (EA) for Military Family Housing Revitalization at Keesler Air Force Base (AFB), Mississippi. The overall purpose of the project is to provide a minimum of 1067 military family housing (MFH) units at Keesler AFB which meet Air Force housing standards as well as the ongoing and projected housing requirements for the installation. This document describes and analyzes alternative plans for revitalization of military family housing on Keesler AFB, including the No Action Alternative, under which housing privatization would not occur.

We request your participation in the process, and solicit any comments or concerns you have on the Draft EA. Please return all comments within 14 days from the date of this memorandum. Please direct any questions to Mr. George Daniel, 81 CES/CEV, at 228-377-5823.

Sincerely

  
LISA NOBLE, REM

Attachment  
Draft Environmental Assessment

-----Original Message-----

**From:** Bryan\_Williams@deq.state.ms.us [mailto:Bryan\_Williams@deq.state.ms.us]

**Sent:** Wednesday, March 08, 2006 11:16 AM

**To:** George.daniel@keesler.af.mil

**Cc:** Robert\_Seyfarth@deq.state.ms.us; Tonyah\_St Stanley@deq.state.ms.us

**Subject:** DEQ REPONSE: Environmental Assessment

We have received your comments concerning my letter dated August 10, 2005, and your recent changes. We acknowledge the change to "Environmental Assessment for Military Family Housing Revitalization (instead of Privatization)" and that the work will not be done by a private contractor. Our comments are not affected by this change and do not see a need for additional comments. Thank you for notifying us of this change.

Bryan Williams  
Air Toxics Branch  
Mississippi Department of Environmental Quality  
601-961-5799



HISTORIC PRESERVATION  
PO Box 571, Jackson, MS 39205-0571  
601-576-6940 • Fax 601-576-6955  
mdah.state.ms.us

March 1, 2006

Mr. George Daniel  
Environmental Flight  
81 CES/CEV  
508 L Street  
Keesler AFB, Mississippi 39534

Dear Mr. Daniel:

RE: Draft Environmental Assessment for the Revitalization of Military Family Housing  
at Keesler Air Force Base, Biloxi, Harrison County


We have reviewed your cultural resources assessment request that we received on February 28, 2006, for the above referenced project proposal in accordance with our responsibilities outlined in 36 CFR 800.4 and 800.5 regarding the identification of historic properties and assessment of any potential adverse effects. It is our determination that no properties listed in or eligible for listing in the National Register of Historic Places will be affected. Therefore, we have no reservations with the proposal.

In addition, we are not aware of any potential of this undertaking to affect Indian cultural or religious sites. However, if you require confirmation of this, the tribal entities will have to be contacted directly.

Should there be additional work in connection with the project, or any changes in the scope of work, please let us know in order that we may provide you with appropriate comments in compliance with the above referenced regulations. There remains a very remote possibility that unrecorded cultural resources may be encountered during construction. Should this occur, we would appreciate your contacting us immediately so that we may take appropriate steps under 36 CFR 800, part 13, regarding our response within forty-eight hours. If we can be of further assistance, please do not hesitate to contact this office.

Sincerely,

H. T. Holmes  
State Historic Preservation Officer

  
By: Thomas H. Waggener  
Review and Compliance Officer

cc: Clearinghouse for Federal Programs

Board of Trustees: William F. Winter, president / Arch Dalrymple III / Kane Ditto / Lynn Crosby Gammill / E. Jackson Garner  
Gilbert R. Mason, Sr. / Duncan M. Morgan / Martis D. Ramage, Jr. / Rosemary Taylor Williams / Department Director: H. T. Holmes



-----Original Message-----

From: Lloyd\_Inmon@fws.gov [mailto:Lloyd\_Inmon@fws.gov]  
Sent: Tuesday, March 07, 2006 2:39 PM  
To: george.daniel@keesler.af.mil  
Cc: Kathy\_Lunceford@fws.gov  
Subject: FWLS RESPONSE: EA for housing at Keesler Air Force Base

George,

The Fish and Wildlife Service (FWS) has reviewed the subject document. The document appears to address our concerns. Therefore, we have no further comments at this time. If you require an official response on FWS letterhead, let me know. Have a great day.

Lloyd Inmon  
Contaminants Specialist  
6578 Dogwood View Parkway  
Suite A  
Jackson, MS 39213  
601-321-1134



**MISSISSIPPI  
DEPARTMENT OF MARINE RESOURCES**

March 1, 2006


Mr. George Daniel  
81 CES/CEVN  
508 L. Street  
Keesler AFB, MS 39534-2115

Re: Draft Environmental Assessment (EA) for the Revitalization of Military  
Family Housing; DMR-060711

Dear Mr. Daniel:

The Mississippi Department of Marine Resources (DMR) received a request for review for the above mentioned project. This project is proposing no wetland impacts, and therefore, no further authorization is needed from our office. We do request that you follow Best Management Practices (BMPs) to minimize the potential for indirect erosional impacts to wetland areas adjacent to project sites. If you have any further questions, please contact Jill Bockenstette at (228) 374-5028.

Sincerely,

  
Jerry Brashier  
Director, Regulatory Functions

JB/jab

1141 Bayview Avenue • Biloxi, MS 39530-1613 • Tel: (228) 374-5000 • [www.dmr.state.ms.us](http://www.dmr.state.ms.us)  
An Equal Opportunity Employer

-----Original Message-----

**From:** Hand, Joseph H SAM [mailto:Joseph.H.Hand@sam.usace.army.mil]

**Sent:** Thursday, March 09, 2006 11:20 AM

**To:** george.daniel@keesler.af.mil

**Cc:** Rees, Susan I SAM

**Subject:** CORP RESPONSE - Military Family Housing Revitalization at Keesler AFB dated February 2006

George,

I have reviewed the subject EA and offer the following comments. The EA includes all necessary coordination with the appropriate resource agencies and is extremely detailed. The only recommendation I have would be to add a section after "Environmental Consequences" called "Findings and Conclusions". This added section would briefly recap the findings and conclude that an Environmental Impact Statement (EIS) is not required and support preparation of a Finding of No Significant Impact (FNSI). This section would tie the document together and give the reader your conclusion of the assessment.

If you need any additional information please call or e-mail me. I look forward to any further reviews of this EA or any other environmental documentation from your organization.

Thanks,

Joe Hand  
Civil Engineer, Coastal Environment Team  
U.S. Army Corps of Engineers - Mobile  
251-694-3881  
[joseph.hand1@us.army.mil](mailto:joseph.hand1@us.army.mil)



STATE OF MISSISSIPPI  
DEPARTMENT OF FINANCE AND ADMINISTRATION

## MEMORANDUM

TO: DEPARTMENT OF THE AIR FORCE  
AIR EDUCATION & TRAINING COMMAND  
508 L STREET  
KEESLER AFB MS 39534 2115

DATE: MAR - 9 2006

FROM: STATE CLEARINGHOUSE FOR FEDERAL PROGRAMS

SUBJECT: REVIEW COMMENTS - Activity:  
DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR MILITARY FAMILY  
HOUSING REVITALIZATION AT KESSLER AIR FORCE BASE (AFB),  
HARRISON COUNTY, MS. PROJECT WILL PROVIDE MINIMUM OF 1067  
MILITARY FAMILY HOUSING (MFH) UNITS AT THE BASE.

State Application Identifier Number MS060224-001R

Location: HARRISON

Contact: GEORGE DANIEL

The State Clearinghouse, in cooperation with state agencies interested or possibly affected, has completed the review process for the activity described above.

## INTERGOVERNMENTAL REVIEW PROCESS COMPLIANCE:

- ( ) We are enclosing the comments received from the state agencies for your consideration and appropriate actions. The remaining agencies involved in the review did not have comments or recommendations to offer at this time. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.
- (✓) Conditional clearance pending completion of required public comments period.
- ( ) None of the state agencies involved in the review had comments or recommendations to offer at this time. This concludes the State Clearinghouse review, and we encourage appropriate action as soon as possible. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.
- ( ) The review of this activity is being extended for a period not to exceed 60 days from the receipt of notification to allow adequate time for review.

## COASTAL PROGRAM COMPLIANCE (Coastal area activities only):

- ( ) The activity has been reviewed and complies with the Mississippi Coastal Program. A consistency certification is to be issued by the Mississippi Department of Marine Resources in accordance with the Coastal Zone Management Act.
- ( ) The activity has been reviewed and does not comply with the Mississippi Coastal Program.



**Community Development Department**

676 Dr. Martin Luther King, Jr. Blvd.

P. O. Box 508

Biloxi, MS 39533-0508

Phone: 228-435-6280

FAX: 228-435-6188

March 10, 2006

Ms. Lisa Noble  
Deputy Chief, Environmental Flight  
81<sup>st</sup> Civil Engineer Squadron  
508 L Street  
Biloxi, MS 39534-2115

Re: Environmental Assessment for Military Family Housing Revitalization

Dear Ms. Noble:

I have reviewed your Environmental Assessment for Military Family Housing Revitalization and find that this project is a vital needed project to enable military families to return to the area to have access to safe, quality, well-maintained housing. Therefore I do not have any adverse comments regarding this proposed project.

If you have any questions or need additional information regarding this project, please contact me at 228-435-6275.

Sincerely,

Jerry Creel, Director  
Community Development

cc: David Staehling, Director of Administration

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## **APPENDIX B**

### **SUPPORTING INFORMATION FOR CHAPTERS 3 AND 4**





**BIOLOGICAL RESOURCES****Information on Protected Species (Excerpt from Keesler AFB Integrated Natural Resources Management Plan [INRMP] 2001)**

Although there are no federal or state endangered, threatened, or candidate status species identified as occurring on Keesler AFB, there are thirteen (13) species potentially present in the vicinity of Keesler AFB. These animals are listed in the following table:

<b>Protected Species in the Vicinity of Keesler AFB</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status***</b>	<b>State Status***</b>
Brown Pelican	<i>Pelecanus occidentalis</i>	E	
Manatee	<i>Trichechus manatus</i>	E	E
Alabama Red-bellied Turtle	<i>Pseudemys alabamensis</i>	E	
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	E	
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E	
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	E	
Piping Plover	<i>Charadrius melodus</i>	T	
Loggerhead Sea Turtle	<i>Caretta caretta</i>	T	
Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	T	
Green Sea Turtle	<i>Chelonia mydas</i>	T	
Mississippi Redbellied Turtle	<i>Pseudemys sp.</i>		E
Mississippi Diamondback Terrapin	<i>Malaclemys terrapin pileata</i>		C
Gulf Salt Marsh Snake	<i>Nerodia clarkii clarkii</i>		C

\*\*\*E = Endangered

T = Threatened

C = Candidate

**Information on Non-Protected Species (Excerpt from Keesler AFB INRMP 2001)**

<b>List of Non-protected Fauna Species that Occur On or In the Vicinity of Keesler AFB</b>	
<b>Common Name</b>	<b>Scientific Name</b>
<b>Mammals</b>	
Gray squirrel	<i>Sciurus carolinensis</i>
Fox squirrel	<i>Sciurus niger</i>
Norway rat	<i>Rattus norvegicus</i>
Cotton rat	<i>Sigmodon hispidus</i>
Rice rat	<i>Oryzomys palustris</i>
Opossum	<i>Didelphis marsupialis</i>
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
Raccoon	<i>Procyon lotor</i>
Swamp rabbit	<i>Sylvilagus aquaticus</i>
House mouse	<i>Mus musculus</i>
<b>Birds</b>	
Acadian flycatcher	<i>Empidonax virescens</i>
Pigeon	<i>Columba livia</i>
Mourning dove	<i>Zenaida macroura</i>
Grebe	<i>Podiceps spp.</i>
Barn owl	<i>Tyto alba</i>
Tree swallow	<i>Tachycineta bicolor</i>
Wood duck	<i>Aix sponsa</i>
Sandhill crane	<i>Grus canadensis</i>
Killdeer	<i>Charadrius vociferus</i>
Laughing gull	<i>Larus atricilla</i>
Gull-billed tern	<i>Sterna nilotica</i>
Royal tern	<i>Sterna maxima</i>
Great blue heron	<i>Ardea herodias</i>
Snowy egret	<i>Egretta thula</i>
Cattle egret	<i>Bubulcus ibis</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Common grackle	<i>Quiscalus quiscula</i>
Common loon	<i>Gavia immer</i>
Canada goose	<i>Branta canadensis</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Northern mockingbird	<i>Mimus polyglottos</i>
House sparrow	<i>Passer domesticus</i>
Brown thrasher	<i>Toxostoma rufum</i>
Cardinal	<i>Cardinalis cardinalis</i>
Blue jay	<i>Cyanocitta cristata</i>
<b>Reptiles</b>	
Cottonmouth Snake	<i>Agkistrodon piscivorus</i>

## **AIR QUALITY**

This appendix presents an overview of the Clean Air Act (CAA) and the State of Mississippi air quality program. The appendix also discusses emission factor development and calculations including assumptions employed in the air quality analyses presented in the Air Quality sections of Chapters 3 and 4.

### **Air Quality Program Overview**

#### **National Ambient Air Quality Standards**

In order to protect public health and welfare, the U.S. Environmental Protection Agency (USEPA) has developed numerical concentration-based standards or National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants (based on health related criteria) under the provisions of the CAA Amendments of 1970. There are two kinds of NAAQS: Primary and Secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (*Government Printing Office*).

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the federal program. The Air Division within the Mississippi Department of Environmental Quality (MDEQ) administers the state’s air pollution control program under authority of the Mississippi Air and Water Pollution Control Law. Mississippi has adopted the NAAQS as written in the federal regulations (40 CFR Part 50). The federal ambient air quality standards are presented in Table B-1.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than (attainment), worse than (nonattainment) the NAAQS, and unclassifiable. Those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant are “unclassifiable” and are treated as attainment until proven otherwise. Attainment areas can be further classified as “maintenance” areas. Maintenance areas are those areas previously classified as nonattainment and have successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of the state are in compliance with the NAAQS.

Each state is required to develop a state implementation plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

Mississippi has statewide air quality-monitoring networks that are operated by both state and local environmental programs (*MDEQ Historic Numerical Ozone Data & MDEQ State Air Monitoring Reports*). Ambient air quality data from these monitors are used to assess the region's air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur dioxide. The monitors tend to be concentrated in areas with the largest population densities. Not all pollutants are monitored in all areas. The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards. Also included are areas where the ambient standards are being met but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The end-result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality exceedences of the NAAQS, as well as pollutant trends.

The MDEQ operates monitors in several counties, including Harrison County. Over the years of record there have been exceedences (pollutant concentration greater than the numerical standard) of a NAAQS. However, there has not been a violation (occurrence of more exceedences of the standard than is allowed within a specified time period) of an ambient standard (*MDEQ State Air Monitoring Reports*). Currently, the state of Mississippi is attainment for all criteria pollutants.

**Table B-1. National and State Ambient Air Quality Standards**

<b>Criteria Pollutant</b>	<b>Averaging Time</b>	<b>Federal Primary NAAQS<sup>1,2,3</sup></b>	<b>Federal Secondary NAAQS<sup>1,2,4</sup></b>
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm <sup>5</sup> (10 mg/m <sup>3</sup> ) <sup>6</sup> 35 ppm (40 mg/m <sup>3</sup> )	No standard No standard
Lead (Pb)	Quarterly	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
Nitrogen Dioxide (NO <sub>2</sub> )	Annual	0.053 ppm (100 µg/m <sup>3</sup> ) <sup>7</sup>	0.053 ppm (100 µg/m <sup>3</sup> )
Ozone (O <sub>3</sub> )	1-hour <sup>8</sup> 8-hour <sup>9</sup>	0.12 ppm (235 µg/m <sup>3</sup> ) 0.08 ppm (157 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> ) 0.08 ppm (157 µg/m <sup>3</sup> )
Particulate Matter ≤10 Micrometers (PM <sub>10</sub> )	Annual 24-hour <sup>10</sup>	50 µg/m <sup>3</sup> 150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup> 150 µg/m <sup>3</sup>
Particulate Matter ≤2.5 Micrometers (PM <sub>2.5</sub> )	Annual 24-hour	15 µg/m <sup>3</sup> 65 µg/m <sup>3</sup>	15 µg/m <sup>3</sup> 65 µg/m <sup>3</sup>
Sulfur Dioxide (SO <sub>2</sub> )	Annual 24-hour 3-hour	0.03 ppm (80 µg/m <sup>3</sup> ) 0.14 ppm (365 µg/m <sup>3</sup> ) No standard	No standard No standard 0.50 ppm (1300 µg/m <sup>3</sup> )
1. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year.			
2. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury; ppm refers to parts per million by volume.			
3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.			
4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.			
5. ppm = parts per million			
6. mg/m <sup>3</sup> = milligrams per cubic meter			
7. µg/m <sup>3</sup> = micrograms per cubic meter			
8. The ozone one-hour standard still applies to areas that were designated nonattainment when the ozone eight-hour standard was adopted in July 1997. The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1 averaged over a three-year period.			
9. The 8-hour ozone standard is attained when the three-year average of the annual fourth-highest daily maximum 8-hour average is not greater than 0.08 ppm.			
10. The PM <sub>10</sub> 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.			

### New Source Review/Prevention of Significant Deterioration

To ensure that NAAQS are met and maintained, a preconstruction permitting program entitled New Source Review was developed. This program is comprised of two separate processes known as Nonattainment New Source Review and Prevention of Significant Deterioration.

As previously mentioned, nonattainment areas are areas where one of the listed federal criteria pollutants has not met the NAAQS for that particular region. Major new or modified stationary sources of air emissions must meet more stringent permitting standards so that air quality is not degraded further. Typically, new or modified sources compare their projected emissions with the Significant Emissions Rate (SER) thresholds for the area. These SER thresholds can vary depending on the severity status of the nonattainment area, which can be rated between moderate and severe. Sources that have projected emissions that exceed the nonattainment SER are required to install Lowest Achievable Emissions Rate (LAER) air pollution control technology. Installation of this costly technology helps to reduce the impact of the new or modified source on the regions air quality.

In attainment areas, major new or modified stationary sources of air emissions on and in the area are subject to Prevention of Significant Deterioration (PSD) review to ensure that these sources are constructed without causing significant adverse deterioration of the clean air in the area. A major new source is defined as one that has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specific major source thresholds: 100 or 250 tons/year based on the source's industrial category. A major modification is a physical change or change in the method of operation at an existing major source that causes a significant "net emissions increase" at that source of any regulated pollutant. Table B-2 provides a tabular listing of the PSD SER thresholds for selected criteria pollutants (*USEPA Draft New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Permitting*).

**Table B-2. Criteria Pollutant Significant Emissions Rate Increases Under PSD Regulations**

Pollutant	Significant Emissions Rate (tons/year)
PM <sub>10</sub>	15
Total Suspended Particulate (TSP)	25
SO <sub>2</sub>	40
NO <sub>x</sub>	40
Ozone (VOC)	40
CO	100

Source: Title 40 CFR Part 52

PM<sub>10</sub> = Particulate matter with a diameter less than or equal to 10 microns

SO<sub>2</sub> = Sulfur dioxide

NO<sub>x</sub> = Nitrogen oxides

VOC = Volatile organic compounds

CO = Carbon monoxide

The goal of the PSD program is to: 1) ensure economic growth while preserving existing air quality, 2) protect public health and welfare from adverse effects that might occur even at pollutant levels better than the NAAQS, and 3) preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas. CAA requires sources subject to PSD review obtain a permit before commencing construction. The permit process requires an extensive review of all other major sources within a 50-mile radius and all Class I areas within a 62-mile radius of the facility. Emissions from any new or modified source must be controlled using Best Available Control Technology. The air quality, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increase identified in Table B-3.

**Table B-3. Federal Allowable Pollutant Concentration Increases Under PSD Regulations**

Pollutant	Averaging Time	Maximum Allowable Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Class I	Class II	Class III
PM <sub>10</sub>	Annual	4	17	34
	24-hour	8	30	60
SO <sub>2</sub>	Annual	2	20	40
	24-hour	5	91	182
	3-hour	25	512	700
NO <sub>2</sub>	Annual	2.5	25	50

Source: Title 40 CFR Part 52

$\mu\text{g}/\text{m}^3$  = Micrograms per cubic meter

PM<sub>10</sub> = Particulate matter with a diameter less than or equal to 10 microns

SO<sub>2</sub> = Sulfur dioxide

NO<sub>2</sub> = Nitrogen dioxide

Aid dispersion modeling is used to ensure that PSD incremental concentrations are not excluded. National parks and wilderness areas are designated as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development. Currently there are no designated Class III areas in the United States.

### Conformity Rules

In accordance with Section 176(c) of the CAA, USEPA promulgated the General Conformity Rule that is codified at 40 CFR 51, Subpart W. The provisions of this rule apply to state review of all federal actions submitted pursuant to 40 CFR 51, Subpart W. The Conformity Rule only affects federal actions occurring in nonattainment areas (areas that do not meet the NAAQS) and maintenance areas (areas that were classified as nonattainment but now are in attainment). Since the Proposed and Alternative Actions are located in attainment areas, Keesler AFB would not need to prepare a conformity determination for the Proposed or Alternative Actions. However, the general concept of the conformity rule was used as a criterion, although not necessary.

## Project Calculations

### Demolition Emissions:

Demolition calculations for this Environmental Assessment (EA) were completed using guidance from *GAP Filling PM<sub>10</sub> Emission Factors for Selected Open Dust Sources* (USEPA Gap Filling PM<sub>10</sub> Emission Factors for Selected Open Area Dust Sources). Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris loading, and on-site truck traffic to remove debris have been individually developed.

Dismemberment of a structure can be estimated using the AP-42 equation for batch drop operations:

$$E_D = k (.0032) * ((U/5)^{1.3} / (M/2)^{1.4}) \text{ lb/ton}$$

Where

k = .35 for PM<sub>10</sub>

U = mean wind speed (default = 5 mph)

M = material moisture content (Default = 2%)

And  $E_D = .0011 \text{ lbs/ton}$  (with default parameters)

This factor can be modified for waste tonnage related to structural floor space. The following relationships were determined from a 1976 analysis by Murphy and Chatterjee (1976) of the demolition of 12 commercial brick, concrete, and steel buildings:

Where:

- 1 ft<sup>2</sup> floor space = 10 ft<sup>3</sup> original building volume
- 1 ft<sup>3</sup> building volume = .25 ft<sup>3</sup> waste volume
- 1 yard<sup>3</sup> building waste = .5 ton weight
- Mean truck capacity = 30 yard<sup>3</sup> haulage volume

From these data, 1 square foot (ft<sup>2</sup>) of floor space represents .046 tons of waste material, and a revised emission factor related to structural floor space can be obtained:

$$E_D = .0011 \text{ lbs/ton} * .046 \text{ ton/ft}^2 = .000051 \text{ lbs/ft}^2$$

The proposed emission factor for debris loading is based on two tests of the filling of trucks with crushed limestone using front end loader, part of the test basis for the batch drop equation in



AP-42, 11.2.3. Crushed limestone was considered closest in composition to the broken brick and plaster found in demolished commercial buildings. The measured emission factors for crushed limestone were .053 and .063 pounds (lbs)/TSP. To convert the average TSP factor, .058 lbs/ton, to a PM<sub>10</sub> factor with source extent of structural floor space, the previously determined estimate of .046 ton/ft<sup>2</sup> and particle size multiplier must be used. The result is the emission factor for debris loading:

$$E_L = k(.058) \text{ lb/ton} * .046 \text{ ton/ft}^2 = .00093 \text{ lbs/ft}^2$$

where k is .35 is derived from the recommended particle size multipliers developed by Muleski et al. (1987).

The emissions factor used for on-site truck traffic is based on the unpaved road equation:

$$E = k (5.9) * (s/12)(S/30)(W/30)^{.7} * (w/4)^{.5} * (365-P/365) \text{ lb/VMT}$$

Where

k= .36 for PM<sub>10</sub>

s = silt content (default = 12%)

S = truck speed (default = 10 mph)

W = truck weight (default = 22 tons)

w = truck wheels (default = 10 wheels)

p = number of days with precipitation (default = 0 days)

For a demolition site, 10-wheel trucks of mean 22-ton gross weight are estimated to travel a quarter mile on-site for each round trip to remove dry debris. With this information and default values for the unpaved road equation, the emission factor for on-site truck traffic becomes:

$$E_T = (.36) (5.9) * (12/12)(10/30)(22/30)^{.7} * (10/4)^{.5} * (365-0/365) \text{ lb/VMT} = 4.5 \text{ lb/VMT}$$

To convert this emissions factor from lb/vehicle mile traveled (VMT) to lb/ ft<sup>2</sup> of structural floor space, it is necessary to use the previously described relationships obtained from Murphy and Chatterjee (1976).

$$.25 \text{ mi}/30 \text{ yd}^3 \text{ waste} * \text{yd}^3 / 4 \text{ yd}^3 \text{ volume} * 10 \text{ yd}^3 \text{ volume/yd}^2 \text{ floor space} * \text{yd}^2 / 9 \text{ ft}^2$$

$$= .0023 \text{ mi/ft}^2$$

$$\text{and } E_T = 4.5 \text{ lb/VMT} * .0023 \text{ mi/ft}^2 = .01 \text{ lb/ft}^2$$

Combining each of the aforementioned factors for building demolition, debris loading, and truck traffic provides a recommend factor of:

$$\begin{aligned} E_{10} &= E_D + E_L + E_T \\ &= .000051 + .00093 + .01 \text{ lb/ft}^2 \\ &= .011 \text{ lb/ft}^2 \end{aligned}$$

This value was then multiplied by the gross square footage to be demolished to ascertain the PM<sub>10</sub> emissions for the demolition activities.

### Construction Emissions

Construction emissions calculations were completed using the calculation methodologies described in the U.S. Air Force Air Conformity Applicability Model (ACAM). As previously indicated, a conformity determination is not required since Harrison County is designated “attainment;” the ACAM was used to provide a level of consistency with respect to emissions factors and calculations.

The ACAM evaluates the individual emissions from different sources associated with the construction phases. These sources include grading activities, asphalt paving, construction worker trips, stationary equipment (e.g., saws and generators), architectural coatings, and mobile equipment emissions (*USAF ACAM Technical Document*).

### Grading Activities

Grading activities are divided into grading equipment emissions and grading operation emissions. Grading equipment calculations are combusive emissions from equipment engines and are ascertained in the following manner:

$$\text{VOC} = .22 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{NO}_x = 2.07 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{PM}_{10} = .17 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{CO} = .55 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

$$\text{SO}_2 = .21 \text{ (lbs/acre/day)} * \text{Acres} * \text{DPY}_1 / 2000$$

Where Acres = number of gross acres to be graded during Phase I construction.

DPY<sub>1</sub> = number of days per year during Phase I construction that are used for grading

2000 = conversion factor from pounds to tons

All emissions are represented as tons per year.

Grading operations are calculated using a similar equation from the Sacramento Air Quality Management District and the South Coast Air Quality Management Districts (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*). These calculations include grading and truck hauling emissions.

$$PM_{10} \text{ (tons/yr)} = 60.7 \text{ (lbs/acre/day)} * \text{Acres} * DPY_1 / 2000$$

Where Acres = number of gross acres to be graded during Phase I construction.

DPY<sub>1</sub> = number of days per year during Phase I construction that are used for grading

2000 = conversion factor from pounds to tons

Calculations used in the EA assumed that there were no controls used to reduce fugitive emissions. Also, it was assumed that construction activities would occur within 1,825 days (5 years) and grading activities would represent 10 percent of that total. Therefore, 182 days was the duration established for grading operations. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*).

#### Architectural Coatings

Architectural coating emissions are released through the evaporation of solvents that are contained in paints, varnishes, primers, and other surface coatings.

$$VOC_{SF} \text{ (lbs/yr)} = 65.6 \text{ (lbs/unit)} * \text{Number of Single Family Units}$$

Where: Number of Single Family Units = total number of single-family units to be constructed in the given year of construction.

2000 = conversion factor from pounds to tons

It was assumed that construction activities in a given year would be completed within 1,825 days (5 years). After subtracting the grading activities from the estimated overall construction time, the actual construction period was reduced to 1,643 days. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*).

#### Asphalt Paving

VOC emissions are released during asphalt paving and are calculated using the following methodology:

$$\text{VOC}_{\text{PT}} (\text{tons/yr}) = (2.62 \text{ lbs/acre}) * \text{Acres Paved} / 2000$$

Acres Paved = total number of acres to be paved at the site.

2000 = conversion factor from pounds to tons

### Construction Worker Trips

Construction worker trips during the construction phases of the project are calculated and represent a function of the number of residential units to be constructed and/or square feet of non-residential construction.

$$\text{Trips (trips/day)} = .72 (\text{trip/unit/day}) * \text{Number of Family Units}$$

Total daily trips are then applied to the following factors depending on the corresponding years.

Year 2005 through 2009:

$$\text{VOC}_{\text{E}} = .016 * \text{Trips}$$

$$\text{NOx}_{\text{E}} = .015 * \text{Trips}$$

$$\text{PM}_{10\text{E}} = .0022 * \text{Trips}$$

$$\text{CO}_{\text{E}} = .262 * \text{Trips}$$

Year 2010 and beyond:

$$\text{VOC}_{\text{E}} = .012 * \text{Trips}$$

$$\text{NOx}_{\text{E}} = .013 * \text{Trips}$$

$$\text{PM}_{10\text{E}} = .0022 * \text{Trips}$$

$$\text{CO}_{\text{E}} = .262 * \text{Trips}$$

To convert from pounds per day to tons per year:

$$\text{VOC (tons/yr)} = \text{VOC}_{\text{E}} * \text{DPY}_{\text{II}}/2000$$

$$\text{Nox (tons/yr)} = \text{NOx}_{\text{E}} * \text{DPY}_{\text{II}}/2000$$

$$\text{PM}_{10}(\text{tons/yr}) = \text{PM}_{10\text{E}} * \text{DPY}_{\text{II}}/2000$$

$$\text{CO (tons/yr)} = \text{CO}_{\text{E}} * \text{DPY}_{\text{II}}/2000$$

Where: Number of Family Units = total number of family units to be constructed in the given year of construction.

2000 = conversion factor from pounds to tons

DPY<sub>II</sub> = number of days per year during Phase II construction activities.

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*).

#### Stationary Equipment

Emissions from stationary equipment occur when gasoline powered equipment (e.g. saws, generators, etc.) is used at the construction site.

$$\text{VOC} = .198 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{NO}_x = .137 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{PM}_{10} = .004 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{CO} = 5.29 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{SO}_2 = .007 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

Where RES = number of residential units to be constructed during Phase II construction.

GRSQF = Gross square feet of non-residential units to be constructed during phase II.

DPY<sub>II</sub> = number of days per year during Phase II construction.

2000 = conversion factor from pounds to tons.

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*).

#### Mobile Equipment

Mobile equipment emissions include pollutant releases associated with forklifts, dump trucks, etc., used during Phase II construction.

$$\text{VOC} = .17 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{NO}_x = 1.86 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{PM}_{10} = .15 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{CO} = .78 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

$$\text{SO}_2 = .23 * (\text{RES} + \text{GRSQFT}) * \text{DPY}_{\text{II}} / 2000$$

Where RES = number of residential units to be constructed during Phase II construction.

GRSQF = Gross square feet of non-residential units to be constructed during Phase II.

DPY<sub>II</sub> = number of days per year during Phase II construction.

2000 = conversion factor from pounds to tons.

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District (*Air Quality Thresholds of Significance and CEQA Air Quality Handbook*).

### National Emissions Inventory

The National Emissions Inventory (NEI) is operated under USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, and from tribes, as well as from industry. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual point or major sources (facilities), as well as county level estimates for area, mobile, and other sources, are available currently for years 1996 and 1999 for criteria pollutants and HAPs.

Criteria air pollutants are those for which USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database.

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO<sub>x</sub>)
- Sulfur Dioxide (SO<sub>2</sub>)
- Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

The NEI also includes emissions of VOCs, which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources.

- Point Sources - Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A "major" source emits a threshold amount (or more) of at least one criteria pollutant, and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- Area Sources - Small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example, i.e., a single dry cleaner within an inventory area typically will not qualify as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.

- Mobile Sources - Any kind of vehicle or equipment with a gasoline or diesel engine; airplane; or ship.

The main sources of criteria pollutant emissions data for the NEI are:

- For electric generating units – USEPA’s Emission Tracking System/Continuous Emissions Monitoring Data (ETS/CEM) and Department of Energy fuel use data.
- For other large stationary sources – state data and older inventories where state data was not submitted.
- For on-road mobile sources – the Federal Highway Administration’s (FHWA’s) estimate of vehicle miles traveled and emission factors from USEPA’s MOBILE Model.
- For non-road mobile sources – USEPA’s NONROAD Model.
- For stationary area sources – state data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data was not submitted.

State and local environmental agencies supply most of the point source data. USEPA’s Clean Air Market program supplies emissions data for electric power plants.

### **SOLID WASTE**

Worksheets B-1, B-2, B-3, and B-4 detail calculations used to estimate debris generated during the No Action Alternative, Proposed Action, Alternative 1, and Alternative 2, respectively. As the worksheets indicate, it was assumed that 4.4 lbs/ft<sup>2</sup> and 3.9 lbs/ft<sup>2</sup> would be generated during residential and non-residential construction, respectively. Debris generated from demolition activities was similarly assumed to be 111 lbs/ft<sup>2</sup>.

Worksheet B-1  
Estimated Debris Generated under the No Action Alternative

	Project Year 1				Project Year 2				Project Year 3				Project Year 4				Project Year 5			
	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons
<b>Demolition</b>																				
2-, 3-, and 4-Bedroom	284	409,728	45,479,762	22,740	213	307,296	34,109,822	17,055	213	307,296	34,109,822	17,055	-	-	-	-	-	-	-	-
Additional Surfaces	284	362,100	8,690,400	4,345	213	271,575	6,517,800	3,259	213	271,575	6,517,800	3,259	-	-	-	-	-	-	-	-
<b>Demolition Total</b>		<b>771,828</b>	<b>54,170,162</b>	<b>27,085</b>		<b>578,871</b>	<b>40,627,622</b>	<b>20,314</b>		<b>578,871</b>	<b>40,627,622</b>	<b>20,314</b>	-	-	-	-	-	-	-	-
<b>Construction</b>																				
3-Bedroom	46	93,656	410,213	205	35	71,260	312,119	156	35	71,260	312,119	156	-	-	-	-	-	-	-	-
4-Bedroom	27	77,760	340,589	170	21	60,480	264,902	132	21	60,480	264,902	132	-	-	-	-	-	-	-	-
Additional Surfaces	73	93,075	362,993	181	56	71,400	278,460	139	56	71,400	278,460	139	-	-	-	-	-	-	-	-
<b>Construction Total</b>		<b>264,491</b>	<b>1,113,795</b>	<b>567</b>		<b>203,140</b>	<b>855,481</b>	<b>428</b>		<b>203,140</b>	<b>855,481</b>	<b>428</b>	-	-	-	-	-	-	-	-
<b>TOTAL ANNUAL C&amp;D DEBRIS</b>		<b>1,036,319</b>	<b>55,283,957</b>	<b>27,642</b>		<b>782,011</b>	<b>41,483,103</b>	<b>20,742</b>		<b>782,011</b>	<b>41,483,103</b>	<b>20,742</b>	-	-	-	-	-	-	-	-

Average C&D debris from residential demolition (incl. slab) 111.0 lb/sf2  
Average C&D debris from demolition of additional surfaces 24.0 lb/sf2 (Assumes a concrete depth of 2 inches and a concrete density of 150 lb/cubic foot)  
Average C&D debris generated from residential new construction 4.4 lb/sf2  
Average C&D debris from non-residential new construction 3.9 lb/sf2  
Source: Characterization of Building-related Construction and Demolition Debris in the United States, USEPA, 1998

Affected Areas

	Avg Square Feet	Adult Surface
<b>Demolition/Renovation</b>		
2-, 3-, and 4-Bedroom	1,443	1,275
<b>Construction</b>		
3-Bedroom	2,036	1,275
4-Bedroom	2,880	1,275



**Worksheet B-2**  
**Estimated Debris Generated under the Proposed Action**

	Project Year 1				Project Year 2				Project Year 3				Project Year 4				Project Year 5			
	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons
<b>Demolition</b>																				
2-, 3-, and 4-Bedroom	635	916,116	101,688,905	50,844	477	688,169	76,386,784	38,193	476	686,727	76,226,644	38,113	0	0	0	0	0	0	0	0
Additional Surfaces	635	809,625	19,431,000	9,716	477	608,175	14,536,200	7,238	476	606,900	14,565,600	7,283	0	0	0	0	0	0	0	0
<b>Demolition Total</b>		<b>1,725,741</b>	<b>121,119,905</b>	<b>60,560</b>		<b>1,296,344</b>	<b>90,922,984</b>	<b>45,431</b>		<b>1,293,627</b>	<b>90,792,244</b>	<b>45,396</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Construction</b>																				
3-Bedroom	305	620,980	2,719,892	1,360	229	466,244	2,042,149	1,021	228	464,208	2,033,231	1,017	0	0	0	0	0	0	0	0
4-Bedroom	120	345,600	1,513,728	757	93	267,840	1,173,139	587	92	264,960	1,160,525	580	0	0	0	0	0	0	0	0
Additional Surfaces	425	541,875	2,113,313	1,057	322	410,550	1,601,145	801	320	408,000	1,591,200	796	0	0	0	0	0	0	0	0
Housing Maint. Office	0	0	0	0	0	0	0	0	1	4,000	15,600	8	0	0	0	0	0	0	0	0
Community Center	0	0	0	0	0	0	0	0	1	8,000	31,200	16	0	0	0	0	0	0	0	0
Recreational Facility	0	0	0	0	0	0	0	0	1	12,000	46,800	23	1	12,000	46,800	23	1	12,000	46,800	23
Swimming Pool	0	0	0	0	0	0	0	0	1	11,644	45,412	23	0	0	0	0	0	0	0	0
Covered Bus Stop	0	0	0	0	0	0	0	0	5	500	1,950	1	4	400	1,560	1	3	300	1,170	1
Skateboard Park	0	0	0	0	0	0	0	0	1	10,890	42,471	21	0	0	0	0	0	0	0	0
Storage Unit	0	0	0	0	0	0	0	0	294	29,400	114,660	57	160	16,000	62,400	31	80	8,000	31,200	16
<b>Construction Total</b>		<b>1,508,455</b>	<b>6,346,933</b>	<b>3,173</b>		<b>1,144,634</b>	<b>4,816,433</b>	<b>2,408</b>		<b>1,213,602</b>	<b>5,083,048</b>	<b>2,542</b>	<b>28,400</b>	<b>110,760</b>	<b>55</b>		<b>20,300</b>	<b>79,170</b>	<b>40</b>	
<b>TOTAL ANNUAL C&amp;D DEBRIS</b>		<b>3,234,196</b>	<b>127,466,838</b>	<b>63,733</b>		<b>2,440,978</b>	<b>95,799,417</b>	<b>47,900</b>		<b>2,507,229</b>	<b>95,875,292</b>	<b>47,938</b>	<b>28,400</b>	<b>110,760</b>	<b>55</b>		<b>20,300</b>	<b>79,170</b>	<b>40</b>	

Average C&amp;D debris from residential demolition (incl. slab)

111.0 lb/m<sup>2</sup>

Average C&amp;D debris from demolition of additional surfaces

24.0 lb/m<sup>2</sup>

Average C&amp;D debris generated from residential new construction

4.4 lb/m<sup>2</sup>

Average C&amp;D debris from non-residential new construction

3.9 lb/m<sup>2</sup>

Source: Characterization of Building-related Construction and Demolition Debris in the United States, USEPA, 1998

(Assumes a concrete depth of 2 inches and a concrete density of 150 lb/cubic foot)

**Affected Areas**

	Avg Square Feet	Addtl Surface
<b>Demolition/Renovation</b>		
2-, 3-, and 4-Bedroom	1,443	1,275
<b>Construction</b>		
3-Bedroom	2,036	1,275
4-Bedroom	2,880	1,275
Housing Maint. Office	4,000	0
Community Center	8,000	0
Recreational Facility	12,000	0
Swimming Pool	11,644	0
Covered Bus Stop	100	0
Skateboard Park	10,890	0
Storage Unit	100	0

**Worksheet B-3**  
**Estimated Debris Generated under the Immediate Privatization Alternative (Alternative 1)**

	Project Year 1				Project Year 2				Project Year 3				Project Year 4				Project Year 5			
	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons
<b>Demolition</b>																				
2-, 3-, and 4-Bedroom																				
FY05 O&M	284	409,728	45,479,762	22,740	213	307,296	34,109,822	17,055	213	307,296	34,109,822	17,055	0	0	0	0	0	0	0	0
Developer	351	506,369	56,209,143	28,105	132	190,437	21,138,481	10,569	132	190,437	21,138,481	10,569	132	190,437	21,138,481	10,569	131	188,994	20,978,341	10,489
Additional Surfaces	635	809,625	19,431,000	9,716	345	439,875	10,557,000	5,279	345	439,875	10,557,000	5,279	132	188,900	4,039,200	2,020	131	167,025	4,008,600	2,004
<b>Demolition Total</b>		<b>1,725,711</b>	<b>121,119,905</b>	<b>60,560</b>		<b>937,607</b>	<b>65,805,303</b>	<b>32,903</b>		<b>937,607</b>	<b>65,805,303</b>	<b>32,903</b>		<b>398,737</b>	<b>25,177,681</b>	<b>12,589</b>		<b>356,019</b>	<b>24,986,941</b>	<b>12,483</b>
<b>Construction</b>																				
3-Bedroom	305	620,980	2,719,892	1,360	115	234,140	1,025,533	513	115	234,140	1,025,533	513	115	234,140	1,025,533	513	112	228,032	998,780	499
4-Bedroom	122	351,360	1,538,957	769	46	132,480	580,262	290	46	132,480	580,262	290	46	132,480	580,262	290	45	129,600	567,648	284
Additional Surfaces	427	544,425	2,123,258	1,062	161	205,275	800,573	400	161	205,275	800,573	400	161	366,620	1,605,796	803	157	357,532	1,566,428	783
Housing Maint. Office	1	4,000	15,600	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community Center	1	8,000	31,200	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recreational Facility	1	12,000	46,800	23	1	12,000	46,800	23	1	12,000	46,800	23	0	0	0	0	0	0	0	0
Swimming Pool	0	0	0	0	1	11,644	45,412	23	0	0	0	0	0	0	0	0	0	0	0	0
Covered Bus Stop	5	500	1,950	1	2	200	780	0	2	200	780	0	2	200	780	0	1	100	390	0
Skateboard Park	0	0	0	0	0	0	0	0	1	10,890	42,471	21	0	0	0	0	0	0	0	0
Storage Unit	245	24,500	95,550	48	92	9,200	35,880	18	92	9,200	35,880	18	92	9,200	35,880	18	92	9,200	35,880	18
<b>Construction Total</b>		<b>1,565,765</b>	<b>6,573,207</b>	<b>3,287</b>		<b>604,939</b>	<b>2,535,240</b>	<b>1,268</b>		<b>604,185</b>	<b>2,532,299</b>	<b>1,266</b>		<b>742,640</b>	<b>3,248,251</b>	<b>1,624</b>		<b>724,564</b>	<b>3,169,126</b>	<b>1,585</b>
<b>TOTAL ANNUAL C&amp;D DEBRIS</b>		<b>3,291,506</b>	<b>127,693,111</b>	<b>63,847</b>		<b>1,542,546</b>	<b>68,340,542</b>	<b>34,170</b>		<b>1,541,792</b>	<b>68,337,602</b>	<b>34,169</b>		<b>1,101,377</b>	<b>28,425,932</b>	<b>14,213</b>		<b>1,080,583</b>	<b>28,156,067</b>	<b>14,078</b>

Average C&amp;D debris from residential demolition (incl. slab)

111.0 lb/sf

Average C&amp;D debris from demolition of additional surfaces

24.0 lb/sf

(Assumes a concrete depth of 2 inches and a concrete density of 150 lb/cubic foot)

Average C&amp;D debris generated from residential new construction

4.4 lb/sf

Average C&amp;D debris from non-residential new construction

3.9 lb/sf

Source: Characterization of Building-related Construction and Demolition Debris in the United States, USEPA, 1998

**Affected Areas**

	Avg Square Feet	Addl Surface
<b>Demolition/Renovation</b>		
2-, 3-, and 4-Bedroom	1,443	1,275
<b>Construction</b>		
3-Bedroom	2,036	1,275
4-Bedroom	2,880	1,275
Housing Maint. Office	4,000	0
Community Center	8,000	0
Recreational Facility	12,000	0
Swimming Pool	11,644	0
Covered Bus Stop	100	0
Skateboard Park	10,890	0
Storage Unit	100	0

**Worksheet B-4**  
**Estimated Debris Generated under the Maximum Development Alternative (Alternative 2)**

	Project Year 1				Project Year 2				Project Year 3				Project Year 4				Project Year 5			
	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons	# of Units	Totals SF	C&D lbs	C&D tons
<b>Demolition</b>																				
2-, 3-, and 4-Bedroom																				
FY05 O&M	284	409,728	45,479,762	22,740	213	307,296	34,109,822	17,056	213	307,296	34,109,822	17,056	0	0	0	0	0	0	0	0
Developer	351	506,389	56,209,143	28,105	132	190,437	21,138,481	10,569	132	190,437	21,138,481	10,569	132	190,437	21,138,481	10,569	131	188,994	20,978,341	10,489
Additional Surfaces	635	809,625	19,431,000	9,716	345	439,875	10,557,000	5,279	345	439,875	10,557,000	5,279	132	168,300	4,039,200	2,020	131	167,025	4,008,600	2,004
<b>Demolition Total</b>		<b>1,725,741</b>	<b>121,119,905</b>	<b>60,560</b>		<b>937,607</b>	<b>65,805,303</b>	<b>32,903</b>		<b>937,607</b>	<b>65,805,303</b>	<b>32,903</b>		<b>398,737</b>	<b>25,177,681</b>	<b>12,589</b>		<b>396,019</b>	<b>24,986,941</b>	<b>12,493</b>
<b>Construction</b>																				
3-Bedroom	306	623,016	2,728,810	1,364	115	234,140	1,025,533	513	115	234,140	1,025,533	513	115	234,140	1,025,533	513	115	234,140	1,025,533	513
4-Bedroom	184	529,920	2,321,050	1,161	69	198,720	870,394	435	69	198,720	870,394	435	69	198,720	870,394	435	68	195,840	857,779	429
Additional Surfaces	490	624,750	2,436,525	1,218	184	234,600	914,940	457	184	234,600	914,940	457	184	234,600	1,895,927	948	183	233,325	1,883,312	942
Housing Maint. Office	1	4,000	15,600	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community Center	1	8,000	31,200	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recreational Facility	1	12,000	46,800	23	1	12,000	46,800	23	1	12,000	46,800	23	0	0	0	0	0	0	0	0
Swimming Pool	0	0	0	0	1	11,644	45,412	23	0	0	0	0	0	0	0	0	0	0	0	0
Covered Bus Stop	5	500	1,950	1	2	200	780	0	2	200	780	0	2	200	780	0	1	100	390	0
Skateboard Park	0	0	0	0	0	0	0	0	1	10,890	42,471	21	0	0	0	0	0	0	0	0
Storage Unit	245	24,500	95,550	48	92	9,200	35,880	18	92	9,200	35,880	18	92	9,200	35,880	18	92	9,200	35,880	18
<b>Construction Total</b>		<b>1,826,888</b>	<b>7,177,885</b>	<b>3,838</b>		<b>700,304</b>	<b>2,939,738</b>	<b>1,470</b>		<b>695,750</b>	<b>2,936,798</b>	<b>1,468</b>		<b>676,800</b>	<b>3,828,514</b>	<b>1,914</b>		<b>672,005</b>	<b>3,802,895</b>	<b>1,901</b>
<b>TOTAL ANNUAL C&amp;D DEBRIS</b>		<b>3,552,627</b>	<b>128,797,389</b>	<b>64,399</b>		<b>1,638,111</b>	<b>68,745,041</b>	<b>34,373</b>		<b>1,637,357</b>	<b>68,742,100</b>	<b>34,371</b>		<b>1,035,537</b>	<b>29,006,195</b>	<b>14,503</b>		<b>1,028,824</b>	<b>28,789,836</b>	<b>14,395</b>

Average C&amp;D debris from residential demolition (incl. slab)

111.0 lb/#2

Average C&amp;D debris from demolition of additional surfaces

24.0 lb/#2

(Assumes a concrete depth of 2 inches and a concrete density of 150 lb/cubic foot)

Average C&amp;D debris generated from residential new construction

4.4 lb/#2

Average C&amp;D debris from non-residential new construction

3.9 lb/#2

Source: Characterization of Building-related Construction and Demolition Debris in the United States, USEPA, 1998

**Affected Areas**

	Avg Square Feet	Addl Surface
<b>Demolition/Renovation</b>		
2-, 3-, and 4-Bedroom	1,443	1,275
<b>Construction</b>		
3-Bedroom	2,036	1,275
4-Bedroom	2,880	1,275
Housing Maint. Office	4,000	0
Community Center	8,000	0
Recreational Facility	12,000	0
Swimming Pool	11,644	0
Covered Bus Stop	100	0
Skateboard Park	10,890	0
Storage Unit	100	0

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